4-Years B.TECH
COMPUTER SCIENCE ENGINEERING

WITH EFFECT FROM 2010-11 ADMITTED BATCH

SYLLABI
(Tentative)

CHAIRMAN
BOARD OF STUDIES

DEPARTMENT OF COMPUTER SCIENCE AND SYSTEMS ENGINEERING
COLLEGE OF ENGINEERING
ANDHRA UNIVERSITY
VISAKHAPATNAM-3
### I/IV B.E./B.TECH. (FOUR YEAR COURSE) – SEMESTER SYSTEM

#### I & II SEMESTERS

<table>
<thead>
<tr>
<th>CODE NO.</th>
<th>COURSE</th>
<th>CREDITS</th>
<th>PERIODS L/T/Lab.</th>
<th>Exam. Hours</th>
<th>Sessional Marks</th>
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### II/IV B.TECH. (CSE)  I - SEMESTER

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### III/IV B.TECH. (CSE) I - SEMESTER

#### B.TECH. (CSE) 3rd YEAR I-SEMESTER SCHEME OF INSTRUCTION AND EXAMINATION WITH EFFECT FROM 2010-11 ADMITTED BATCH

<table>
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**TOTAL CREDITS**: 33

**ELECTIVE-I**:  
[1]. COMPUTER GRAPHICS,  
[2]. DIGITAL SIGNAL PROCESSING ,  
[3]. FAULT TOLERANT COMPUTING,  
[4]. COMBINATORICS & GRAPHIC THEORY.

### III/IV B.TECH. (CSE) II - SEMESTER

#### B.TECH. (CSE) 3rd YEAR II-SEMESTER SCHEME OF INSTRUCTION AND EXAMINATION WITH EFFECT FROM 2010-11 ADMITTED BATCH

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**TOTAL CREDITS**: 28

**ELECTIVE - II**  
[1]. PRINCIPLES OF PROGRAMMING LANGUAGE  
[2]. BIO-INFORMATICS  
[3]. IMAGE PROCESSING.  
[4]. VHDL

* The industrial training will be for three weeks during the summer after third year second semester.

### IV/IV B.TECH. (CSE) I - SEMESTER

#### B.TECH. (CSE) 4th YEAR I-SEMESTER SCHEME OF INSTRUCTION AND EXAMINATION WITH EFFECT FROM 2010-11 ADMITTED BATCH

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**TOTAL CREDITS**: 30

**ELECTIVE-III**:  
[1]. EMBEDDED SYSTEMS,  
[2]. NEURAL NETWORKS & FUZZY LOGIC  
[3]. RANDOM PROCESSES IN ENGINEERING.

* The industrial training will be for three weeks during the summer after third year second semester and assessment will be done in the 4th year first semester with a seminar on the training he/she got.
### B.TECH. (CSE) 4th Year II-Semester Scheme of Instruction and Examination with Effect from 2010-11 Admitted Batch

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**TOTAL CREDITS:** 26

**ELECTIVE-IV:**


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### B.TECH. (CSE) 2nd Year I-Semester Scheme of Instruction and Examination with Effect from 2010-11 Admitted Batch

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**TOTAL CREDITS:** 28
I. Semiconductors:
Electronic Emission from metal carrier concentration in an intrinsic
Semiconductors open circuited PN junction – diffusion.

II. PN Junction Diode:
PN Junction Diode, VI Characteristics of PN Junction Diode, capacitance effects in
PN Junction Diode, Quantitative theory of PN Junction Diode.

III. Special Devices:
Principles, Working of zero diode, Tunnel diode, Varactor diode, Schottky diode, SCR and UJT.

IV. Transistors:
The bipolar junction Transistor – Operation of PNP and NPN Transistors – Transistor Circuit
configurations- characteristics of a CE configurations – h parameter, low frequency small signal equivalent
circuit of a Transistor.

V. Transistor Biasing and thermal stabilization:
Transistor Biasing, stabilization, Different methods of transistor biasing – Fixed bias, Collector feedback bias –
self bias – Bias compensation.

VI. Field Effect Transistors:
Junction Field Effect Transistors (JFET) – JFET characteristics, JFET Parameters, Small equivalent circuit –
MOSFETS – Depletion and Enhancement MOSFETS.

VII. Rectifying circuits:
Half wave and full wave rectifiers – Bridge rectifiers – rectifier efficiency, Ripple and

VIII. Transistor Amplifiers:
CE, CB, CC amplifier configurations – Analysis using h- parameters – Multistage amplifier – RC coupled
amplifier – frequency response curve and bandwidth.

TEXT BOOK:
Electronic Device and Circuits by Sanjeev Gupth.

REFERENCE:
Integrated Electronics by Millman & Halkias.
CSE 2.1.2 ELEMENTS OF ELECTRICAL ENGINEERING Credits: 4

Instruction: 3 Periods & 1 Tut / week Sessional Marks: 30
Univ. Exam : 3 Hours Univ-Exam-Marks:70

Magnetic circuits: Definitions of magnetic circuit, Reluctance, Magneto-motive force, magnetic flux, Simple problems on magnetic circuits, Hysteresis loss.


A.C. Circuits: Introduction to Steady State Analysis of A.C. Circuits, Single and Balanced 3 Phase Circuits.

Transformers: Transformer principle, EMF equation of transformer, Transformer on load, Equivalent circuit of Transformer, Voltage regulation of Transformer, Losses in a Transformer, Calculation of Efficiency and Regulation by Open circuit and Short circuit Tests.


Alternator: Alternator working principle, EMF equation of Alternator, Voltage Regulation by Sync. Impedance method.

Synchronous Motor: Synchronous Motor principle of Operation, Construction, Methods of starting of synchronous motor

Text Book:
“Elements of Electrical Engineering and Electronics” by V.K.Mehta, S. Chand & Co

Reference Book:
“A First Course in Electrical Engineering” by Kothari.
Introduction to Data Structures: Information and Meaning – Representation of Multi-Dimensional Arrays _ Review of C Programming.

The Stack: Primitive operations – As an Abstract Data Type – Implementing the Stack operations in C.

Infix, Postfix and Prefix: Definitions, Evaluation and Conversions using C.


Queues and Lists: The Queue as Abstract Data Type – Sequential Representation _Types of Queues – Operations – Implementation in C.


Tree Searching: Insertion into a Binary Search Tree – Deleting from a Binary Search Tree – Efficiency of Binary Search Tree operation


Linked Representation of Graphs: Dijkstra’s Algorithm – Organizing the set of Graph Nodes – Application to Scheduling and its implication.

Graph Traversal and Spanning Forests – Undirected Graph and their Traversals, Applications and Efficiency – Minimal Spanning Trees –Prim’s and Kruskal’s Algorithms.

Textbooks:

Note: All Implementation are Using C Language only.
CSE 2.1.4 DISCRETE MATHEMATICAL STRUCTURES - I  Credits:4

Instruction:  3 Periods & 1 Tut/week                  Sessional Marks:     30
Univ. Exam :  3 Hours                  Univ-Exam-Marks:70


Recurrence Relations: Generating Functions of Sequences-Calculating their Coefficients-Recurrence relations-Solving recurrence relations-Method of characteristic Roots- Non-homogeneous Recurrence relations and their solutions

Relations and Digraphs: Relations and Directed Graphs-Special Properties of Binary relations- Equivalence Relations-Ordering Relations-Lattices and Enumeration- Operations on relations-Paths and Closures-Directed Graphs and Adjacency matrices- Applications of sorting, searching and topological sorting.

Graphs: Basic concepts-Isomorphism-subgraphs-Planar Graphs-Euler’s formula- Multigraphs and Euler circuits-Hamiltonian graphs-Chromatic numbers-Four color theorem.

Trees: Trees and their properties-Trees as graphs-spanning trees-Directed trees-Binary trees-Their traversals-Arithmetic and Boolean expressions as trees- height balanced trees.

Text Book:

Reference Books:
2) “ Discrete mathematics” by Richard Johnsonbaugh, Pearson Education, New Delhi
CSE 2.1.5 PROBABILITY, STATISTICS & QUEUING THEORY Credits: 4

Instruction: 3 Periods & 1 Tut/week
Univ. Exam: 3 Hours

Sessional Marks: 30
Univ-Exam-Marks: 70

Probability: Definitions of probability, Addition theorem, Conditional probability, Multiplication theorem, Bayes theorem of probability and Geometric probability.

Random variables and their properties, Discrete Random variable, Continuous Random variable, Probability Distribution joint probability distributions their properties, Transformation variables, Mathematical expectations, probability generating functions.

Probability Distributions / Discrete distributions: Binomial, Poisson Negative binominal distributions and their properties. (Definition, mean, variance, moment generating function., Additive properties, fitting of the distribution.)

Continuous distributions: Uniform, Normal, exponential distributions and their properties.

Curve fitting using Principle of Least Squares.

Multivariate Analysis: Correlation, correlation coefficient, Rank correlation, Regression Analysis, Multiple Regression, Attributes, coefficient of Association, $\chi^2$ – test for goodness of fit, test for independence.

Sample, populations, statistic, parameter, Sampling distribution, standard error, unbiasedness, efficiency, Maximum likelihood estimator, notion & interval estimation.

Testing of Hypothesis: Formulation of Null hypothesis, critical region, level of significance, power of the test.


Large Sample tests: Tests based on normal distribution

Queuing theory: Queue description, characteristics of a queuing model, study state solutions of M/M/1: $\alpha$ Model, M/M/1 ; N Model.


2. Combinational Logic Design, Gate-Level Minimization.
   - Combinational Logic

3. Sequential Logic Design, Synchronous Sequential Logic
   - Registers and Counters.
   - Fundamentals of Asynchronous Sequential Logic

4. Memory and Programmable Logic


REFERENCE BOOKS:
2. Fundamentals of Digital Circuits, A. Ananda Kumar, PHI, 2002
1. Familiarization of electronics component and equipments like C.R.O, Function generator and power supplies etc.

2. To study the V-I characteristics of pn junction diode and determine static resistance and dynamic resistance.

3. To study the characteristics of zener diode and hence determine the dynamic resistance from the characteristics.

4. Determine the voltage regulation of zener diode stabilizer.

5. To study and plot the wave form of half wave and full wave rectifier with and without capacitor filter.

6. To study and plot the input and output characteristics of common emitter transistor and calculate its input and output resistance.

7. To study and plot the input and output characteristics of common base transistor and calculate its input and output resistance.

8. To study the characteristics of FET (Field effect transistor) and hence calculate dynamic (rd), mutual conductance (gm) and amplification factor (μ).

9. To study the frequency response of single stage CE amplifier and hence calculate the band width (3dbBW).

10. To demonstrate the operation, characteristics and design of a saturated bipolar transistor switch.
1. Write a program to implement the operations on stacks.
2. Write a program to implement the operations on circular queues
3. Write a program for sorting a list using Bubble sort and then apply binary search.
4. Write a program to create a binary search tree and for implementing the in order, preorder, post order traversal using recursion
5. Write a program for finding the Depth First Search of a graph, and Breadth First Search of a graph
6. Write a program for converting a given infix expression to postfix form
7. Write a program for evaluating a given postfix expression
8. Write a program for implementing the operations of a dequeue
9. Write a program for the representation of polynomials using circular linked list and for the addition of two such polynomials
10. Write a program for quick sort
11. Write a program for Heap sort
12. Write a program for Merge sort.
13. a) Write a program for finding the transitive closure of a digraph
    b) Write a program for finding the shortest path from a given source to any vertex in a digraph using Dijkstra’s algorithm
<table>
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<th>Name of the Subject</th>
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TOTAL CREDITS 26
Overview of operations Research: OR models – OR Techniques


Network Models : Definitions – CPM and PERT – Their Algorithms
Integer Programming : Branch and Bound Algorithms cutting plan algorithm.

Dynamic Programming: Recursive nature of dynamic programming – Forward and Backward Recursion

Deterministic Inventory Models : Static EOQ Models – Dynamic EOQ models.


Books:

1. Introduction to Operations Research by HILLIER/LIEBERMAN, Tata McGraw Hill
CSE 2.2.2  DISCRETE MATHEMATICAL STRUCTURES - II  Credits:4

Instruction:  3 Periods & 1 Tut /week                                Sessional Marks: 30
Univ-Exam : 3 Hours                                                   Univ-Exam Marks:70

Introduction: Relations-Types of relations-Matrix representation of relations- Representation of relations as graphs-Ordering-Partial Ordering-Functions-Composition of Functions-Binary and n-ary Operations-Characteristic Functions of a set-Hashing functions-Recursion-Primitive recursive functions-Recursive functions.

Algebraic Structures: Algebraic Systems-Semi groups and Monoids-Grammars and Languages-Polish expression and their compilation-Groups-The application of residue arithmetic to Computers- Group Codes

Lattices: Lattices as Partially Ordered Sets-Properties of Lattices- Sublattices-Direct Product and Homomorphisms-Isomorphisms-Modular Lattices-Distributive lattices- Complemented lattices –Their Properties

Boolean Algebra: Definition- Subalgebra-Direct Product-Homomorphisms- Isomorphisms-Boolean Functions-Representation of Boolean Functions-Minimization of Boolean Functions-Design examples of Boolean Algebra

Computability: Introduction-Finite State Machines-Introductory Sequential Circuits- Equivalence of Finite State Machines-Finite State Acceptors and Regular Grammars- Turing Machines and Partial Recursive Functions.

Text Book:

Reference Books:
1) Discrete and combinatorial mathematics by Ralph. G. Grimaldi Pearson Education, New Delhi
The 8085A µP. Architecture and Instruction Set:
Introduction to Microprocessors and Microcomputers, Internal Architecture and Functional/Signal Description of typical 8-bit µP.- 8085, Instruction Set and Timing Diagrams of 8085 µP.

Programming the 8085 µP.:
Assembly Language Programming Requirements, Programming Techniques: Looping, Counting, and Indexing, Counter and timing Delays, Stack and Subroutines, Code Conversion, BCD Arithmetic, 16-bit data Operations, Interrupts and Interrupt Service Routines

The 8086 µP. Architecture and Instruction Set:
Internal Architecture and Functional/Signal Description of 8086/8088
Segmented Memory, Maximum-Mode and Minimum-Mode Operation, Addressing Modes, Instruction Set and Timing Diagrams

Programming the 8086 µP.:
Assembly Language Requirements, Data Definition, COM and EXE program Files
Programming techniques: Logical Processing, Arithmetic processing, Time Delay Loops Procedures, Data tables, Modular programming, and Macros

TEXT BOOKS:

REFERENCE BOOK:
Register Transfer and Micro operations:
Register Transfer Language, Register Transfer, Bus and Memory Transfers, Arithmetic Micro-operations, Logic Micro-operations, Shift Micro-operations, Arithmetic Logic Shift Unit.

Basic Computer Organization and Design:
Instruction Codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycle, Memory-Reference Instructions, Input-Output and Interrupt, Complete Computer Description.

Microprogrammed Control:
Control Memory, Address Sequencing, Micro program Example.

Central Processing Unit:
Introduction, General Register Organization, Stack Organization, Instruction Formats, Addressing Modes, Data Transfer and Manipulation, Program Control.

Computer Arithmetic:
Introduction, Addition and Subtraction, Decimal Arithmetic Unit.

Input-Output Organization:
Peripheral Devices, Input-Output Interface, Asynchronous Data Transfer, Modes of Transfer, Priority Interrupt, Direct Memory Access.

Memory Organization:
Memory Hierarchy, Main Memory, Auxiliary Memory, Associative Memory, Cache Memory, Virtual Memory.

Text Book:

Reference Book:
CSE 2.2.5    OBJECT ORIENTED PROGRAMMING LAB     Credits:4

Instruction:  3 Periods & 1 Tut /week   Sessional Marks: 30
Univ-Exam :  3 Hours   Univ-Exam Marks:70

1. Procedural Paradigms, Object Oriented Paradigm, Concept of Data Abstraction Encapsulation, Inheritance and Polymorphism
2. Introduction to U.M.L : Description of various U.M.L. Diagrams with examples.

C++
3. **Basics of Object Oriented Programming**: benefits of OOP, data types, declarations, expressions and operator precedence, functions, scope of variables
4. **Introduction to OOP**: Classes and objects, Constructors & Destructors, Operator Overloading & type conversions.
5. **Inheritance**: Derived classes, syntax of derived classes, making private members inheritable, single, multilevel, multiple, hierarchical, hybrid inheritance
6. **Polymorphism**: Pointers, virtual functions and polymorphism- pointers to objects, this pointer, pointers to derived classes, virtual and pure virtual functions.
7. **Templates, Exception handling, console I/O and File I/O**: class templates, Function templates, member function templates, exception handling, managing console I/O operations, working with files.

JAVA
8. **Introduction to JAVA**: Introduction, Classes and Objects, Arrays, strings and Vectors, Exception Handling, Managing I/O files in Java.
9. **Packages and Interface, and Multi threading**: Packages, Interfaces, creating, extending, stopping, blocking threads, thread states, thread methods, exceptions, priority in threads, synchronization, Runnable interface.

**Text Books:**
1. JAVA 2.0- Complete Reference : Herbert Schildt & F. Naughton.
2. Introduction to JAVA PROGRAMMING by Y.Daniel Liang (PHI)
3. Object oriented Programming using C++: E. Balagurusamy, PHI
4. Programming with JAVA- A primer: E. Balagurusamy, PHI
5. The Unified Modeling Languages user Guide by Grady Booch Etal.(Pearson Education)

**References:**
6. Object Oriented Programming in C++: N. Barkakati, PHI
7. Object Oriented Programming through C++ by Robat Laphore.
8. Object Oriented Analysis and Design by Andrew Haigh – (Tata Mcgrah Hjill.)
Module 1: Introduction
(a) Definition, Scope and importance
(b) Measuring and defining environmental development: indicators (1 lecture)

Module 2: Ecosystem
(a) Introduction, types, characteristic features, structure and functions of Ecosystems
- Forest – Grassland – Desert – Aquatic (lakes, rivers and estuaries) (2 lectures)

Module 3: Environmental and Natural Resources management
(a) Land resource
- Land as a resource - Common property resource - Land degradation - Soil erosion and
desertification - Effects of modern agriculture, fertilizer – pesticide problems
(b) Forest resources
- Use and over-exploitation - Mining and dams - their effects on forest and tribal people
© Water resources
- Use and over-utilization of surface and ground water - Floods and droughts - Water logging and salinity - Dams – benefits and costs - Conflicts over water

(d) Energy resources
- Energy needs - Renewable and non-renewable energy source - Use of alternate energy sources - Impact of energy use on environment (8 lectures)

Module 4: Bio-diversity and its conservation
(a) Value of bio-diversity - Consumptive and productive use, social, ethical, aesthetic and option values
(b) Bio-geographical classification of India - India as a mega diversity habitat
© Threats to biodiversity - Hot spots, habitat loss, poaching of wildlife, loss of species, seeds etc.
(d) Conservation of bio-diversity - In-situ and Ex-situ conservation (3 lectures)

Module 5: Environmental Pollution Local and Global Issues
(a) Cause, effects and control measures of
- Air Pollution - Indoor air pollution - Water pollution - Soil pollution - Marine pollution - Noise pollution - Solid waste management, composting, vermiculture - Urban and industrial wastes, recycling and reuse
(b) Nature of thermal pollution and nuclear hazards
© Global Warming
(d) Acid rain
(e) Ozone depletion (8 lectures)

Module 6: Environmental problems in India
(a) Drinking water, Sanitation and Public health
(b) Effects of activities on the quality of environment
- Urbanization - Transportation - Industrialization - Green revolution
© Water scarcity and Ground Water depletion
(d) Controversies on major dams - resettlement and rehabilitation of people: problems and concerns
(e) Rain water harvesting, cloud seeding and watershed management (5 lectures)

Module 7: Economy and Environment
(a) The economy and environment interaction
(b) Economics of development, preservation and conservation
© Sustainability: theory and practice
(d) Limits to Growth
(e) Equitable use of resources for sustainable lifestyles
Module 8: Social Issues and the Environment
(a) Population growth and environment
(b) Environmental education
(c) Environmental movements
(d) Environment vs Development

Module 9: Institutions and Governance
(a) Regulation by Government
(b) Monitoring and Enforcement of Environmental regulation
(c) Environmental Acts
Water (Prevention and Control of pollution) act-Air (Prevention and Control of pollution) act-Envt. Protection act-Wild life Protection act-Forest Conservation act-Coastal Zone Regulations
(d) Institutions and policies relating to India
(e) Environmental Governance

Module 10: International Conventions
(a) Stockholm Conference 1972
(b) Earth Summit 1992
© World Commission for environmental Development (WCED)

Module 11: Case Studies
(a) Chipko movement
(b) Narmada Bachao Andolan
(c) Silent Valley Project
(d) Madhura Refinery and Taj Mahal
(e) Industrialization of Pattancheru
(f) Nuclear reactor in Nagarjuna Sagar
(g) Tehri dam
(h) Ralegaon Siddhi (Anna Hazare)
(i) Kolleru lake-aquaculture
(j) Florosis in Andhra Pradesh

Module 12: Field Work
(a) Visit to a local area to document and mapping environmental assets- river/forest/grassland/hill/mountain.
(b) Study of local environment- common plants, insects, birds
© Study of simple ecosystems- pond, river, hill, slopes etc.
(d) Visit to Industries, Water treatment plants, affluence treatment plants.
Digital Logic Design Experiments:

1. TTL Characteristics and TTL IC Gates
2. Multiplexers & Decoders
3. Flip-Flops
4. Counters
5. Shift Registers
6. Binary Adders & Subtractors
7. A L U

Assembly Language Programming:

1. 8085 Assembly Language Programming according to theory course microprocessors-I using the following trainers:
   - Keyboard Monitor of 8085µP Trainer.
   - Serial Monitor of 8085µP Trainer with Terminal
   - 8085 Line Assembler of 8085µP Trainer with PC as Terminal
   - 8085 Cross Assembler using In-Circuit Emulator (ICE) with 8085µP Trainer and PC as Terminal

2. 8086 Assembly Language Programming according to theory course Microprocessor-I using the following:
   - PC Assembler using TASM or MASM, TD or SYMDEB or CVD(Code View debugger)

Graded Problems are to be used according to the syllabus of MICROPROCESSORS-I
CSE 2.2.8 OBJECT ORIENTED PROGRAMMING LAB Credits:2

Lab: 3 periods/week  
Univ_Exam: 3 hours.  

Sessional Marks: 50  
Univ_Exam marks: 50

C++

1. Program that implements stack operations using classes and objects.
2. Program performing complex number addition using friend functions.
3. Program for complex number addition using operator overloading.
4. Program to perform string operations by overloading operators.
5. Program on hierarchical inheritance showing public, private and protected inheritances.
6. Program for computation of students result using hybrid inheritance.
7. Program implementing bubble-sort using templates.
8. Program on virtual functions.
10. Program for copying one file to another file using streams.
11. Program for writing and reading a class object to a file.

JAVA

1. Program on packages.
2. Write a program to copy contents of a file into another file using File streams.
3. Program on hierarchical inheritance.
4. Program for handling ArrayIndexOutOfBoundsException and Divide-by-zero Exception.
5. Program for custom exception creation.
6. Program on multi-threading showing how CPU time is shared among all the threads.
8. Program for BannerApplet.
10. Program for implementing mouse events, (drawing lines, curves using mouse etc.)
11. Program on JDBC connectivity where database is Oracle.
12. Program to send messages across two machines using simple sockets.
### III/IV B.TECH. (CSE)  I - SEMESTER

**B.TECH. (CSE) 3rd YEAR I-SEMESTER SCHEME OF INSTRUCTION AND EXAMINATION WITH EFFECT FROM 2010-11 ADMIITTED BATCH**

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<th>Periods</th>
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**TOTAL CREDITS** 33

**ELECTIVE-I:**

[1]. COMPUTER GRAPHICS,  [2]. DIGITAL SIGNAL PROCESSING  ,  [3]. FAULT TOLERANT COMPUTING,  
[4]. COMBINATORICS & GRAPHIC THEORY.
Interfacing Semiconductor Memories:
Semiconductor Memories: Classification, Internal Organisation & Functional Description. Interfacing SRAMs, and EPROMs to 8085/8086

Interfacing I/O Devices:

Interfacing Peripheral ICs to Intel 8085/8086:
Parallel I/O Interface - 8255, Serial I/O Interface – 8251, Timer Interface - 8253, Keyboard/Display Interface - 8279, Interrupt Controller Interface - 8259

Interfacing Data Converters to 8085/8086:
D/A Conversion Methods, A/D Conversion methods, Interfacing DAC, Interfacing ADC.

Introduction to Micro controllers:
Intel 8051 Architecture and Programming

Introduction to Hardware and Software of PCs:
Hardware Organization, DOS Internals, ROM BIOS and BIOS Function Calls, DOS Function Calls, Introduction to Pentium Processors

TEXT BOOKS:

REFERENCE BOOKS:
5. Myke Predko, Programming and Customizing the 8051 Microcontroller, TMH, 1999
Introduction to Systems Programming, Introduction to Assembly Language Programming - Introduction to Instruction Formats, Data formats - Role of Base Register, Index Register.

Introduction to Assembler, databases used in assembler design, Design of Assembler - Single Pass & Double Pass.

Introduction to Macros, various types of Macros, Design of Macro Processor - Single Pass & Double Pass. Introduction to Loaders, functions of a loader, types of Loaders, databases used in Loaders, Design of Loaders - Absolute & DLL.

Introduction to Software Tools, Text editors, Interpreters, Program Generators, Debug Monitors.

**TextBook:** Systems Programming by Donovan
Tata Mc Graw Hill

**Reference:** System Programming by Dhamdhere
Tata Mc Graw Hill, IInd Revised Edition
CSE 3.1.3  ELECTIVE-I  COMPUTER GRAPHICS  Credits:4

Instruction:  3 Periods & 1Tut/Week                  Sessional Marks:  30
Univ_Exam:3 Hours                  Univ_Exam Marks:70


Attributes of Output Primitives:  Line and Curve Attributes-Color and Gray scale levels- Area Fill Attributes-Character Attributes-Bundled Attributes- Inquiry Functions- Antialiasing

Two Dimensional Geometric Transformations:  Basic Transformations- Matrix Representations-Homogeneous Coordinates-Composite Transformations-Other Transformations-Transformations between Coordinate Systems-Affine Transformations- Transformation Functions- Raster methods for Transformations

Two Dimensional Viewing:  The viewing Pipeline-Viewing Coordinate Reference Frame-Window-to-Viewport Coordinate Transformation-Two Dimensional Viewing Functions-Clipping Operations-Point Clipping-Line Clipping-Polygon Clipping-Curve Clipping- Text and Exterior Clipping

Structure And Hierarchical Modeling:  Concepts of Structures and Basic models- Editing - Hierarchical Modeling with Structures-GUI and Interactive Input Methods-Windows and Icons- Virtual Reality Environments

Three Dimensional Concepts and Object representations:  3D display methods-3D Graphics-Polygon Surfaces-Curved Lines and Surfaces- Quadratic Surfaces-Super Quadrics-Blobby Objects-Spline Representations- Cubic Spline methods-Bézier Curves and Surfaces- B Spline Curves and Surfaces


Three Dimensional Viewing:  Viewing Pipeline- Viewing Coordinates- Projections- View Volumes-General Projection Transformations-Clipping-Hardware Implementations-Three Dimensional Viewing

Chapters 1 to 12 except 10-9 to 10-22 of the Text book

Text Book:  Computer Graphics C Version by Donald Hearn & M. Pauline Baker
Pearson Education, New Delhi, 2004

Reference Books:
CSE 3.1.3 ELECTIVE-I    DIGITAL SIGNAL PROCESSING     Credits:4

Instruction: 3 Periods & 1Tut/Week        Sessional Marks: 30
Univ_Exam:3 Hours                          Univ_Exam Marks:70

An Overview of Digital Signal Processing and its Applications

Introduction to Programmable DSPs

Architecture of TMS320C3X

Addressing Modes and Assembly language Instructions of ‘C3X

Application Programs in C3X

An Overview of TMS320C54X

TMS320C54X Assembly language Instructions

Application Programs in C54X FPGA – based DSP

System Design Text Book:
   Digital Signal Processors, Architecture, Programming and Applications, B.Venkataramani
   ,M.Bhaskar, TMH, 2002

Reference Books:
Basic Concepts of Reliability
Faults in Digital Circuits
Test Generation


Introduction to Self-Checking Logic: The two rail Checker,
Design for Testability: Testability, Controllability and Observability, Design of testable Combinational Logic Circuits, Testable design of Sequential Circuits, The scan path technique, Designing testability into logic boards

Text Books:
Fault Tolerant and Fault Testable Hardware Design, Parag K. Lala, PHI, 1985
Reference:
CSE 3.1.3 ELECTIVE-I COMBINATORICS & GRAPH THEORY Credits:4

Instruction: 3 Periods & 1 Tut./week
Univ.-Exam: 3 Hours
Sessional Marks: 30
Univ-Exam-Marks: 70

PART I: COMBINATORICS

2. COMINATORICS: Basics of counting-Combinations and Permutations- Enumeration of Combinations & Permutations without repetitions and without repetitions- with constrained repetitions-Binomial Coefficients-Binomial and Multinomial theorems- Principle of Inclusion-Exclusion

PART II GRAPH THEORY


TEXT BOOKS:

2. Douglas B. West, “Introduction to Graph Theory”, Pearson Education Asia, New Delhi. (Chapters 1,2,3,4,5,6,7)

REFERENCE BOOKS:

3. Robin J. Wilson, “Introduction to Graph Theory” Pearson Education Asia, New Delhi.
CSE 3.1.4  FORMAL LANGUAGES AND AUTOMATA THEORY  Credits: 4

Instruction:  3 Periods & 1Tut/Week                  Sessional Marks:  30
Univ_Exam: 3 Hours                                 Univ_ Exam Marks: 70

1. Finite Automata and Regular Expressions:
Basic Concepts of Finite State Systems, Deterministic and Non-Deterministic Finite Automata,
Finite Automata with e-moves, Regular Expressions, Minimization of Finite Automata, Mealy and
Moore Machines, Two-Way Finite Automata.

2. Regular sets & Regular Grammars:
Basic Definitions of Formal Languages and Grammars, Regular Sets and Regular Grammars, Closure Properties of
Regular Sets, Pumping Lemma for Regular Sets, Decision Algorithm for Regular Sets, Myhill-Nerode Theorem,
Minimization of Finite Automata.

3. Context Free Grammars and Languages:
Context Free Grammars and Languages, Derivation Trees, Simplification of Context Free
Grammars, Normal Forms, Pumping Lemma for CFL, closure properties of CFL's, Decision
Algorithm for CFL.

4. Push down Automata and Deterministic CFL:
Informal Description, Definitions, Push-Down Automata and Context free Languages, Parsing and Push-Down
Automata.

5. Universal Turing Machines and Undecidability:
Design and Techniques for Construction of Turing Machines, Undecidability of PCP. Chomsky
Hierarchy, Regular Grammars, Unrestricted Grammars, Context Sensitive languages, Relationship
between classes of languages.

TEXT BOOKS: Introduction to Automata Theory, Languages
& Computation By J.E.Hopcraft & Jeffery D.Ulman – Narosa
Publishing Company.

REFERENCE BOOKS:
Theory of Computer Science By Mishra & Chandra
Sekharan, PHI.
An Introduction To Formal Languages and Automata,3e By Peter Linz – Narosa Publishing House.
CSE 3.1.5  FILE STRUCTURES  Credits:4

Instruction:  3 Periods & 1 Tut/Week  Sessional Marks:  30
Univ. Exam:  3 Hours  Univ. Exam Marks: 70

File Processing Operations
Physical and logical files, opening, reading & writing and closing files in C, seeking and special characters in files, physical devices and logical files, file-related header files in C

Secondary Storage
Disks – organization, tracks, sectors, blocks, capacity, non-data overhead, cost of a disk access, Magnetic Tape – types, performance, organization estimation of tape length and data transmission times, disk vs tape, CD-ROM – CD-ROM as a file structure, physical organization, strengths and weakness of cd-roms, storage hierarchy

Byte Journey and buffer Management
File manager, I/O buffer, I/O processing, buffer strategies and bottlenecks

File Structure Concepts
A stream file, field structures, reading a stream of fields, record structures and that uses a length indicator, Mixing numbers and characters – use of a hex dump, reading the variable length records from the files

Managing records in C files
Retrieving records by keys, sequential search, direct access, choosing a record structure and record length, header records, file access and file organization

Organizing files for performance
Data compression, reclaiming space – record deletion and storage compaction, deleting fixed-length records for reclaiming space dynamically, deleting variable-length records, space fragmentation, replacement strategies.

Indexing
Index, A simple index with an entry sequenced file, basic operations on an indexed, entry sequenced file, indexes that are too large to hold in memory, indexing to provide access by multiple keys, retrieval using combination of secondary keys, improving the secondary index structure – inverted lists

Indexed sequential file access and prefix B+ Trees
Indexed sequential access, maintaining a sequence set, adding a simple index to the sequence set, the \( B^+ \) tree, simple prefix \( B^+ \) tree maintenance, index set block size, internal set block size, internal structure of index set blocks: a variable B+ tree order B-tree, loading a simple prefix

Special Note: Implementation in C only

Hashing
Collisions in hashing, a simple hashing algorithms, hashing functions and record distributions, memory requirements, collision resolution by progressive overflow, buckets, deletions

Extendible hashing
Working of extendible hashing, implementation, deletion, extendable hashing performance

Designing file structure for CD-ROM
Tree structure on CD-ROM, hashing files on CD-ROM, CD-ROM file structure

Text Book: File Structures – An Object Oriented Approach with C++ by Michael J. Folk, Bill Zoellick and Greg Riccardi, Pearson
CSE 3.1.6 OPERATING SYSTEMS Credits:4

Instruction: 3 Periods & 1 Week./Week  Sessional Marks: 30
Univ. Exam: 3 Hours  Univ. Exam Marks: 70


Processes: Introduction to Processes, Inter Processor Communication, Classical IPC Problems, Process Scheduling

Memory Management: Memory Management without Swapping or Paging, Swapping, Virtual Memory, Page Replacement Algorithms, Modeling paging algorithms, Design issues for paging systems, Segmentation


Deadlocks: Resources, Deadlocks, The O-----ptical Algorithm, Deadlock Detection and Recovery, Deadlock Avoidance, Deadlock Prevention, Other Issues


Text Book: Modern Operating Systems by Andrew S. Tanenbaum

Introduction to Data Structures: Introduction, Data Information, Overview of Data Structures, Types of Data Structures, Primitive and Non-primitive Data Structures and operations, Binary and Decimal Integers, Logical Information, Storage Information, Hardware and Software, Concepts of Data Types, Data Types in c, Abstract Data Types, Pointers, Structures in C, Unions, Algorithms.


Stack and Queues: Introduction, Stack-related terms, Stack Implementation, Operation on stacks, Pointers and stack, Introduction to Queues, various positions of Queues, Queue Implementation, Operation on Queues, Disadvantages of Simple Queues, Dynamic implementation (Pointers), Insertion and Deletion of Queues, Application of Queues.


Trees: Introduction, Basic terms, Binary trees, Extended Binary tree, Binary trees Representation, Operation on Binary Tree, Traversal of Binary Tree, Binary Search tree.

Sorting: Introduction, Sorting and Insertion sort, Selection Sort, Bubble Sort, Quick Sort, Tree Sort, Merging List, Heap Sort, Radix Sort and Partition Exchange Sort.


Graph: Introduction, Terminology, Graph Representation, Traversal in Graph (Breadth first and Depth searches), Spanning Trees, Prim’ algorithm.

Textbooks:
Introduction to Data Structures in C by Ashok N. Kamthane, Pearson Education.

Reference Books:

Note: All Implementation are Using C Language only.
Lab: 3 periods/week  Sessional Marks: 50
Univ_Exam: 3 hours.  Univ_Exam marks: 50

1. Study of laboratory environment:
   Hardware specifications, software specifications

2. Simple Unix-C programs:
   Programs using system calls, library function calls to display and write strings on standard output device and files.

3. Programs using fork system calls.

4. Programs for error reporting using errno, perror( ) function.

5. Programs using pipes.

6. Shell programming.

7. Programs to simulate process scheduling like FCFS, Shortest Job First and Round Robin.

8. Programs to simulate page replacement algorithms like FIFO, Optimal and LRU.

9. Programs to simulate free space management.

10. Programs to simulate virtual memory.

11. Programs to simulate deadlock detection.

References:
Unix concepts and applications by Sumitabha Das, TMH Publications. Unix programming by Stevens, Pearson Education.
Shell programming by Yashwanth Kanetkar.
Operating System Concepts by Silberschatz, and Peter Galvin.
CSE 3.1.8  MICROPROCESSOR-II LAB  Credits:2

Lab:  3 Periods/week  Sessional Marks:  50
Univ-Exam : 3 Hours  Univ-Exam-Marks: 50

INTERFACING WITH 8085 TRAINER

1.1 MEMORY INTERFACE (Interfacing SRAM and EPROM)
1.2 TOGGLE SWITCH KEYBOARD AND LED DISPLAY INTERFACE
1.3 HEX KEYBOARD AND DOT MATRIX HEX LED DISPLAY INTERFACE
1.4 ASCII KEYBOARD INTERFACE
1.5 PUSH BUTTON KEYBOARD MATRIX (8x3) INTERFACE WITH 8085 ICE
1.6 8279-PROGRAMMABLE KEYBOARD/DISPLAY INTERFACE
1.7 CRT TERMINAL INTERFACE

INTERFACING WITH PC

2.1 STEEPER MOTOR CONTROLLER
2.2 DAC/ADC INTERFACE
2.3 8253 TIMER INTERFACE
2.4 MULTIPLEXED DOT MATRIX HEX LEDS INTERFACE
2.5 40-COL./80COL. D.M. PRINTER INTERFACE
2.6 8051 PROGRAMMING EXERCISES
2.7 TRAFFIC LIGHT CONTROLLER INTERFACE
CSE 3.1.9  SOFTSKILLS LAB  Credits:2

Lab: 3 Periods/week  Sessional Marks: 50
Univ-Exam : 3 Hours  Univ-Exam-Marks: 50

1) English Language Skills

2) Spoken English Skills

3) Presentation Skills
### B.TECH. (CSE) 3rd YEAR II-SEMESTER SCHEME OF INSTRUCTION AND EXAMINATION WITH EFFECT FROM 2010-11 ADMITTED BATCH

<table>
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<tr>
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<th>Maximum Marks</th>
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<tr>
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<td>COMPILER DESIGN</td>
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<td>CSE 3.2.2</td>
<td>DESIGN &amp; ANALYSIS OF ALGORITHMS</td>
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<td>DATA BASE MANAGEMENT SYSTEMS</td>
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<td>DATA COMMUNICATIONS</td>
<td>3</td>
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<td>ELECTIVE – II</td>
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<td>COMPUTER ARCHITECTURE</td>
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<td>FILE STRUCTURES LAB.</td>
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<td>CSE 3.2.8</td>
<td>DBMS LAB.</td>
<td>3</td>
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**TOTAL CREDITS** 28

### ELECTIVE - II

1. PRINCIPLES OF PROGRAMMING LANGUAGE
2. BIO-INFORMATICS
3. IMAGE PROCESSING
4. VHDL

* The industrial training will be for three weeks during the summer after third year second semester.
The Theory of Automata: Definition and description, Transition systems, properties, Acceptability of string, NDFA, Equivalence in between DFA & NDFA. Grammars, Types of Grammars, Grammars and Automata, Regular expressions, Finite Automata and Regular expressions, Regular sets and Regular Grammars.

Overall view of Compilers: Brief discussion on various phases of Compilers.

Design of lexical analyzer.


Syntax Directed Translation: Syntax directed translation and implementation, Intermediate code, Postfix notation, parsing tree, Three address Code, Quadruples, Triples.


Brief discussion on symbol tables, Run-time storage administration.

chapters: 1,2,3,4,5,6,7,9,10,11,12,15 of the text book.

Text Book
Principles of Compiler Design by Aho, D. Ullman

Reference Books:


Space and Time Tradeoffs – Sorting by Counting – Input Enhancement in string Matching – Hashing – B-Trees


Text Book:
Introduction to Design & Analysis of Algorithms by Anany Levitin, Pearson Education, New Delhi, 2003

Reference Books:
3. Fundamentals of algorithmics, Gilles Brassard & Paul Bratley, Prentice Hall of India, New Delhi
CSE 3.2.3 DATABASE MANAGEMENT SYSTEMS Credits: 4

Instruction: 3 Periods & 1 Tut /week Sessional Marks: 30
Univ. Exam : 3 Hours Univ-Exam-Marks: 70

Introduction to DBMS: Overview, File system vs DBMS, Advantages of DBMS, Storage data, queries, Transaction Management, DBMS structure

E-R model: Entities, Attributes and Entity sets, Relation ship and Relation ship sets, Features of ER model, Conceptual database design with ER model

Relational model: Integrity constraints over relations and enforcement, Querying relation data, Logical database design, views, destroying/altering tables and views

Relational Languages: algebra and calculus

SQL: Basic SQL, Query, union, interest, except, Nested Queries, Aggregated Operation, Null values, Embedded SQL, cursors, ODBC and JDBC, Triggers and Active database, designing active databases

Schema refinement and normal forms: Schema refinement, fds, reasoning normal forms, normalization up to 3rd & BC normal forms, lossless join & dependency preserving decomposition

Transaction management: Transaction concept, transactions and schedules, concurrent execution of transactions, lock – based concurrency control, crash recovery

Concurrency control: Lock management, specialized locking techniques, concurrency control without locking

Crash Recovery: Aries, recovering from a system crash, media recovery

Text Book:
Database Management Systems by Raghu Ramakrishnan and Johannes Gehrke, McGraw-Hill
1. An Introduction to Data Communications:
   A Communications Model, Data Communications and Data Communications Networking, Protocols and Protocol Architecture, Characteristics of Data Transmission: Concepts and Terminology, Analog and Digital Data Transmission, Transmission Impairments
2. Transmission Media:
3. The Data Communication Interface
   Asynchronous and Synchronous Transmission, Line Configurations, Interfacing. Data Link Control Flow Control, Error Detection, Error Control, High-Level Data Link Control (HDLC), Other Data Link Control Protocols.
4. Data Communications Hardware: Terminals
5. Modems:

**TEXT BOOKS:**
2. Mary E.S. Loomis, Data Communications, PHI-N.J., 1983 (Chapter 3, Chapter 5)
3. Paul Bates, Practical Digital and Data Communications, PHI-N.J, 1987 (Chapter 5)

**REFERENCE BOOKS:**
CSE 3.2.5 ELECTIVE-II    PRINCIPLES OF PROGRAMMING LANGUAGES          Credits:4

Instruction:    3 Periods & 1 Tut /week           Sessional Marks:   30
Univ. Exam : 3 Hours           Univ-Exam-Marks:70

Language Design Issues: Why Study Programming Languages, A Short History of Programming Languages, Role of Programming Languages, Programming Environments
Impact of Machine Architectures: The Operation of a Computer, Virtual Computers and Binding Times
Elementary Data Types: Properties of Types and Objects, Scalar Data Types, Composite Data Types Encapsulation: Structured Data Types, Abstract Data Types, Encapsulation by Subprograms, Type Definitions.
Inheritance: Abstract Data Types Revisited, Inheritance, Polymorphism
Sequence Control: Implement and Explicit Sequence Control, Sequence with Arithmetic Expressions, Sequence Control Between Statements, Sequencing with Nonarithmetic Expressions.
Subprogram Control: Subprogram Sequence Control, Attributes of Data Control, Parameter Transmission, Explicit Common Environment.
Storage Management: Elements Requiring Storage, Programmer- and System - Controlled Storage, Static Storage Management, Heap Storage Management
Distributed Processing: Variations on Subprogram Control, Parallel Programming, Hardware Developments, Software Architecture.

Text Book:
Programming languages – Design and Implementation by Terrence W. Pratt Marvin V. Zelkowitz.

References:
1. **Introduction:**
   Definitions, Sequencing, Biological sequence/structure, Genome Projects, Pattern recognition an prediction, Folding problem, Sequence Analysis, Homology and Analogy.

2. **Protein Information Resources**
   Biological databases, Primary sequence databases, Protein Sequence databases, Secondary databases, Protein pattern databases, and Structure classification databases.

3. **Genome Information Resources**
   DNA sequence databases, specialized genomic resources

4. **DNA Sequence analysis**
   Importance of DNA analysis, Gene structure and DNA sequences, Features of DNA sequence analysis, EST (Expressed Sequence Tag) searches, Gene hunting, Profile of a cell, EST analysis, Effects of EST data on DNA databases

5. **Pair wise alignment techniques**
   Database searching, Alphabets and complexity, Algorithm and programs, Comparing two sequences, sub-sequences, Identity and similarity, The Dotplot, Local and global similarity, different alignment techniques, Dynamic Programming, Pair wise database searching.

6. **Multiple sequence alignment**
   Definition and Goal, The consensus, computational complexity, Manual methods, Simultaneous methods, Progressive methods, Databases of Multiple alignments and searching

7. **Secondary database searching**
   Importance and need of secondary database searches, secondary database structure and building a sequence search protocol

8. **Analysis packages**
   Analysis package structure, commercial databases, commercial software, comprehensive packages, packages specializing in DNA analysis, Intranet Packages, Internet Packages.

**Text Books:**
1. Introduction to Bioinformatics, T K Attwood & D J Parry-Smith
   Addison Wesley Longman
   WILEY dreamlech India Pvt. Ltd

**Reference Books:**
1. Introduction to Bioinformatics, Arthur M.Lesk, OXFORD publishers (Indian Edition)
CSE 3.2.5 ELECTIVE-II IMAGE PROCESSING  
Credits: 4

Instruction: 3 Periods & 1 Tut. /Week  
Sessional Marks: 30

Univ.-Exam : 3 Hours  
Univ-Exam-Marks: 70

1. Fundamentals of Image Processing  
   Image Acquisition, Image Model, Sampling, Quantization, Relationship between pixels, distance measures,  
   connectivity, Image Geometry, Photographic film. Histogram: Definition, decision of contrast basing on histogram,  
   operations basing on histograms like image stretching, image sliding, Image classification. Definition and Algorithm of  
   Histogram equalization.

2. Image Transforms:  
   A detail discussion on Fourier Transform, DFT, FFT, properties. A brief discussion on WALSH Transform,  
   WFT, HADAMARD Transform, DCT.

3. Image Enhancement: (by SPATIAL Domain Methods)  
   a) Arithmetic and logical operations, pixel or point operations, size operations,  
   b) Smoothing filters - Mean, Median, Mode filters – Comparative study,  
   c) Edge enhancement filters – Directorial filters, Sobel, Laplacian, Robert, KIRSCH,  
   Homogeneity & DIFF Filters, prewitt filter, Contrast Based edge  
   enhancement techniques. Comparative study.  
   d) Low Pass filters, High Pass filters, sharpening filters. – Comparative Study.  
   e) Comparative study of all filters.  
   f) Color image processing.

4. Image enhancement: (By FREQUENCY Domain Methods). Design of Low pass, High pass, EDGE Enhancement,  
   smoothening filters in Frequency Domain. Butter worth filter, Homomorphic filters in Frequency Domain. Advantages  
   of filters in frequency domain, comparative study of filters in frequency domain and spatial domain.

5. Image compression: Definition, A brief discussion on – Run length encoding, contour coding, Huffman code,  
   compression due to change in domain, compression due to quantization, Compression at the time of image transmission.  
   Brief discussion on:- Image Compression standards.

6. Image Segmentation: Definition, characteristics of segmentation. Detection of Discontinuities, Thresholding  
   Pixel based segmentation method. Region based segmentation methods – segmentation by pixel aggregation, segmentation by sub region aggregation, histogram based segmentation, spilt and merge technique. Use of motion in segmentation (spatial domain technique only)

7. Morphology:  
   Dilation, Erosion, Opening, closing, Hit-and-Miss transform, Boundary extraction,  
   Region filling, connected components, thinning, Thickening, skeletons, Pruning  
   Extensions to Gray - Scale Images Application of Morphology in I.P

Text Book:  
Digital Image Processing, Rafael C. Gonzalez and Richard E. Woods, Addision Wesley

Reference books:  
1. Fundamentals of Electronic Image Processing, Arthur R. Weeks, Jr. (PHI)  
CSE 3.2.5 ELECTIVE-II       V H D L

Instruction: 3 Periods & 1 Tut. /Week  Sessional Marks: 30
Univ.-Exam : 3 Hours  Univ-Exam-Marks:70

1. Overview of Digital Design with Vermilion HDL
2. Hierarchical Modeling Concepts
3. Basic Concepts
4. Modules and ports
5. Gate-Level Modeling
6. Dataflow Modeling
7. Behaviour Modeling
8. Tasks and Functions

Text Book:

1. Verilog HDL – A Guide to Digital Design and Synthesis, Samir Palnitkar, Pearson Education Pte. Ltd. (chapters: 1,2,3,4,5,6,7,8), 2001

Reference Books:

Computer Evolution, Computational Models The Concept of Computer Architecture Introduction to Parallel Processing Introduction to Instruction-Level Parallel Processors Pipelined Processors VLIW Architectures Superscalar Processors Processing of Control Transfer Instructions Code Scheduling of ILP-Processors Introduction to Data-Parallel Architectures Introduction to MIMD Architectures

Text Books:

Reference Text
1. **File Operations:**
   Opening, reading, writing, closing and creating of files in C++

2. **Study of secondary storage devices:**
   Tracks, sectors, block capacity of disk, tape and CDROMs

3. **File Structures in C++**
   Reading a stream of fields, record structures and its length indicators, Mixing of numbers and characters, Use of a hex dump, Retrieving records by keys using sequential search, direct access

4. **File performance**
   Data compression, storage compacting, reclaiming space dynamically

5. **Indexing and indexed sequential files**
   Index file, inverted file operations, usage of B and B++ trees

6. **Hashing files**
   Hashing functions, algorithms, record distribution and collision resolution by progressive over flow, Extendable hashing and hashing performance
Study features of a commercial RDBMS package such as ORACLE/DB2, MS Access, MYSQL & Structured Query Language (SQL) used with the RDBMS.( Select two of RDMs)

Laboratory exercises should include defining schemas for applications, creation of a database, writing SQL queries, to retrieve information from the database, use of host languages, interface with the embedded SQL, use of forms & report writing packages available with the chosen RDBMS product.

Some sample applications, which may be programmed, are given below: Accounting package for a shop,
Database manager for a Magazine agency or a newspaper agency, Ticket booking for performances,
Preparing greeting cards & birthday cards,
Personal accounts - Insurance, loans, mortgage payments, etc., Doctor's diary & billing system,
Personal bank account, Class marks management, Hostel accounting,
Video Tape library, History of cricket scores,
Cable TV transmission program manager, Personal library.
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<td>COMPUTER NETWORKS</td>
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<td>MANAGEMENT PRINCIPLES</td>
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<td>ELECTIVE-III</td>
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<td>WEB TECHNOLOGIES</td>
<td>3</td>
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<td>CSE 4.1.7</td>
<td>GRAPHICS &amp; MULTIMEDIA LAB.</td>
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<td>CSE 4.1.9</td>
<td>INDUSTRIAL TRAINING &amp; SEMINAR*</td>
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**TOTAL CREDITS 30**

**ELECTIVE-III:**

[1]. EMBEDDED SYSTEMS,  [2]. NEURAL NETWORKS & FUZZY LOGIC  [3]. RANDOM PROCESSES IN ENGINEERING.

* The industrial training will be for three weeks during the summer after third year second semester and assessment will be done in the 4th year first semester with a seminar on the training he/she got.
CSE 4.1.1 Object Oriented Software Engineering Credits:4

Instruction:  3 Periods & 1 Tut. /Week Sessional Marks:  30
Univ.-Exam : 3 Hours Univ-Exam-Marks:70

1. Software Engineering:
   Software related problems, software engineering, concepts, development activities
2. Modeling: Modeling with UML
3. Project Communications:
   Project communication, modes, mechanisms and activities
4. Requirements:
   Requirements elicitation, concepts, activities & managing requirements elicitation
5. Analysis:
   Analysis overview, concepts, activities and managing analysis
6. System Design:
   Design overview, concepts, activities and managing system design
7. Object Design:
   Object design overview, concepts, activities and managing object design
8. Rationale Management:
   Rationale overview, concepts, activities and managing rationale
9. Testing:
   Testing overview, concepts, activities and managing testing
10. Software Configuration Management:
    Configuration Management overview, concepts, activities and managing configuration management
11. Project Management:
    Project management overview, concepts, activities and managing project management models and activities.

Text Book:
Object-Oriented Software Engineering: Conquering Complex and Changing Systems
Bernd Bruegge and Allen H. Dutoit
Pearson Education Asia

Reference Book:
Object-Oriented Software Engineering: Practical software development using UML and Java
Timothy C. Lethbridge and Robert Laganiere
McGraw-Hill Higher education

Asynchronous Transfer Mode: Protocol Architecture, ATM Logical Connections, ATM Cells, ATM Service Categories, Routing in Switched Networks

Congestion Control in Switched Data Networks: Effects of Congestion, Congestion Control, Traffic management, Congestion Control in Packet Switched networks

Principles of Cellular Networks

Local Area Network Overview: Background, Topologies and transmission media, LAN Protocol Architecture, Bridges, Layer 2 and Layer 3 Switches

High Speed LANs: The Emergence of High Speed LANs, Ethernet


Distributed Applications: Electronic Mail: SMTP, HTTP Overview, Network Management Systems, SNMPv1


Reference Books:
Introduction to Artificial Intelligence, Artificial Intelligence Technique, Representation of a problem as State space search, production systems, Problem characteristics, Production System characteristics

Heuristic Search Technologies
Generate & Test Hill Climbing, Best First search, Problem reduction, Constraint satisfaction, Means Endo Analysis

Predicate Logic
Proof with Backward Chaining, Resolution, question answering.

Representing Knowledge Using Rules:
Procedural Vs Declarative knowledge, Logic Programming, Forward Vs Backward Reasoning, Matching, Control Knowledge

Symbolic Reasoning with uncertainty
Non-monotonic Reasoning, Dependency – Directed Backtracking TMS.
Statistical Reasoning with Bayes Theorem, certainty Factors & Rule Based System, DS- Theory.

Weak & Strong Slot Filler Structures
Semantic nets, Frames, Conceptual dependencies, Scripts

Planning
Block world, Components of a Planning System, Goal State Planning, Non Linear Planning, Hierarchical Planning.

Natural Language Processing
Syntactic Analysis, Semantic Analysis, Discusses and Pragmatic Processing.

Expert Systems
Representing and Using Domain Knowledge, Expert Systems Shells, Explanation

Text Books:
2. Introduction to Artificial Intelligence & Expert Systems, Paterson. PHI
1. Nature and functions of management:
   Importance of management – definition of management – management process – Roles of manager –
   management _ a science or art – management _ a profession.
2. Planning:
   Nature of planning – Importance of planning – Types of planning – Steps on planning.
3. Decision – Making:
   Meaning of decision – Types of decisions.
4. Organization :
   Span of management – principles of organizing – departmentalization.
5. Authority Delegation and Decentralization :
   Source of formal authority – difference between authority and power – line and staff
   authority – delegation of authority – decentralization of authority.
6. Coordination:
   Need for coordination – Types of coordination – Techniques of coordination.
7. Direction:
   Requirements of effective direction – Motivation.
8. Importance of communication – Purposes of communication - Formal communication - Informal
   communication – Barriers to communication – Principles of effective Communication.
9. Leadership:
   Difference between a leader and a manager – Characteristics of leadership – Functions of a leader – Approaches to leadership – Effective leadership – Leadership style in Indian organizations.
10. Managerial control :
    Steps in a control process – Need for control – Types of control methods – Essentials of Effective control systems.
11. Social Responsibilities of Business :
    Meaning of social responsibility – social responsibilities of business towards different groups.

Text Book:

CSE 4.1.5  ELECTIVE-III  EMBEDDED SYSTEMS  Credits:4

Instruction:  3 Periods & 1 Tut. /Week          Sessional Marks:  30
Univ.-Exam : 3 Hours                  Univ-Exam-Marks:70

Introduction to embedded systems hardware needs; typical and advanced, timing diagrams, memories (RAM, ROM, EPROM). Tristate devices, Buses, DMA, UART and PLD’s. Built-ins on the microprocessor.


RTOS, Tasks, Scheduler, Shared data reentrancy, priority inversion, mutex binary semaphore and counting semaphore.

Inter task communication, message queue, mailboxes and pipes, timer functions, events. Interrupt routines in an RTOS environment.

Embedded system software design using an RTOS. Hard realtime and soft real time system principles, Task division, need of interrupt routines, shared data.

Embedded Software development tools. Host and target systems, cross compilers, linkers, locators for embedded systems. Getting embedded software in to the target system.

Debugging techniques. Testing on host machine, Instruction set emulators, logic analysers. In-circuit emulators and monitors.

Text Books:
2. Sriram V Iyer and Pankaj Gupta, Embedded Real Time Systems programming, TMH, 2004

Reference Books:
CSE 4.1.5 ELECTIVE-III NEUTRAL NETWORKS & FUZZY LOGIC Credits:4

Instruction: 3 Periods & 1 Tut./Week  Sessional Marks: 30
Univ.-Exam: 3 Hours  Univ-Exam-Marks: 70

1. Neural Networks and Fuzzy Systems

2. Neural Dynamics I: Activations and Signals
   Neurons as Functions, Signal Monotonicity, Biological Activations and Signals, Neuron Fields, Neuronal Dynamical Systems, Common Signal Functions, Pulse-Coded Signal Functions.

3. Neuronal Dynamics II: Activation Models

4. Synaptic Dynamics I: Unsupervised Learning

5. Synaptic Dynamics II: Supervised Learning
   Supervised Function Estimation, Supervised Learning as Operant Conditioning, Supervised Learning as Stochastic Pattern Learning with known Class Memberships, Supervised Learning as stochastic Approximation, The Backpropagation Algorithm.

6. Fuzziness Versus Probability

7. Fuzzy Associative Memories
   Fuzzy Systems as Between-Cube Mappings, Fuzzy and Neural Function Estimators, Fuzzy Hebb FAMs, Adaptive FAMs: Product-Space Clustering in FAM Cells.

TEXT BOOK:
   Neural Networks & Fuzzy Systems, Bark Kosko, PHI Published in 1994

REFERENCE BOOKS:
1. Fundamentals of Artificial Neural Networks, Mohamad H Hassoum. PHI
3. Fuzzy Set Theory & its Application, J. Zimmerman Allied Published Ltd.
CSE 4.1.5 ELECTIVE-III RANDOM PROCESSES IN ENGINEERING  Credits:4

Instruction:  3 Periods & 1 Tut./week  Sessional Marks:  30
Univ.-Exam : 3 Hours  Univ-Exam-Marks:70

1. STOCHASTIC PROCESSES:- Notion of Stochastic Process, Classification of Stochastic Process according to Time and State Space; Discrete time Markov chains, nth step transition probabilities, stationary distribution of Markov chains, Poisson process, Properties of Poisson; Birth and Death Process, Time dependent Birth and Death process, Renewal theory, Applications of elementary renewal theorem and key renewal theorem.


3. QUEUEING THEORY:- Non-Markovian queues, Phase type Technique, Embedded Markov chains Technique, GI/G/1 Queues model, Pollak. Kintchins formula, queues with bulk arrivals queues with bulk services.

4. PRIORITY QUEUING MODELS:- Queues in Series, Queues in Parallel, Scheduling algorithms, Throughput analysis and waiting time distributions, Applications of Queuing theory in Communication Networks.

5. RELIABILITY ANALYSIS:- Concepts of Reliability, Failure Time distributions, Hazard rate functions, Reliability of a component, Bath-tub curve, System reliability, Series systems, parallel systems, Stand by redundancy, Availability, Maintainability, Fault tree constructions, Fault analysis.

REFERENCES:

2. Probability and Statistics with Reliability, Queueing & Computer Science Applications – By Kishore S. Trivedi (Prentice Hall)
CSE 4.1.6 WEB TECHNOLOGIES Credits:4

Instruction: 3 Periods & 1 Tut. /Week  Sessional Marks: 30
Univ.-Exam : 3 Hours  Univ-Exam-Marks:70

HTML Common tags: List, Tables, images, forms, Frames; Cascading Style sheets;

Java Script: - Introduction to Java Scripts, Objects in Java Script, Dynamic HTML with Java Script


Java Beans: Introduction to Java Beans, Advantages of Java Beans, BDK, Introspection, Using Bound properties, Bean Info Interface, Constrained properties Persistence, Customizes, Java Beans API, Introduction to EJB’s


JSP Application Development: Generating Dynamic Content, Using Scripting Elements Implicit JSP Objects, Conditional Processing – Displaying Values Using an Expression to Set an Attribute, Declaring Variables and Methods Error Handling and Debugging Sharing Data Between JSP pages, Requests, and Users Passing Control and Date between Pages – Sharing Session and Application Data – Memory Usage Considerations


TEXT BOOKS:
1. Internet and World Wide Web – How to program by Dietel and Nieto PHI/Pearson Education Asia.
2. Advanced Java™ 2 Platform How to Program, Deitel/Deitel/Santry
3. Java Server Pages –Hans Bergsten, SPD O'Reilly

REFERENCE:
1. HTML Black Book: The Programmer's Complete HTML Reference Book-by Steven Holzner
2. Core SERVLETS AND JAVASERVER PAGES VOLUME 2: CORE TECHNOLOGIES by Marty Hall and Larry Brown Pearson

1. Drawing various types of lines and curves.
2. Creating various types text and fonts.
3. Creating two dimensional objects using the lines and curves
4. Animating the two dimensional pictures using transformations.
5. Coloring the pictures and Zooming.
6. Creating an object and applying animation of key framing.
7. Creating three dimensional objects using wire frame modeling.
8. Rotation, scaling and translating the 3D objects.
9. Coloring the 3D objects.
10. Shading the 3D objects
11. Rendering the objects
13. Creating rugged surfaces based on fractal geometry.

Multimedia:

1. Preproduction & Presentation Graphics: Create a 7-10 slide presentation in your favorite presentation graphics application. (Power point is suggested: Corel Presentations 9 is free and is acceptable.)
2. Typefaces and Graphics: Create 1 vector and 1 bitmap graphic; they must be your original work created in any of the acceptable tools.
4. Production Planning and Design: Create a proposal of project. Include summary, flowchart, element and resource lists.
5. User Interface Design & Graphics II: Create a user interface for your final project. Include 2 backgrounds and 1 button set. Aim for a cohesive look.
6. Multimedia Sound: Create 2 soundtracks and 2 EFX sounds for a previous project.
7. Digital Video: Use video capture to digitize your video shoot ro another video source to create short production (15-45 seconds)
8. Create three basic Web pages using Dreamweaver / flash or other authoring package or write bare HTML if you are able; pages must be linked and must include at least one graphic per page.

Books:

Lab: 3 Periods/week  Sessional Marks: 50
Univ.-Exam: 3 Hours  Univ-Exam-Marks: 50

Computing Platform:
Each student group chooses its own platform, subject to approval by the instructor

Course Objectives:
1. They can design and implement complex software solutions using state of the art software engineering techniques.
2. They have working knowledge of UML, source control, and project management.
3. They have deep knowledge of the technologies they used for implementing their project.
4. They know how to test and document software.
5. They are capable of working as part of a software team and develop significant projects under a tight deadline.
6. They are able to present their work in a professional manner.

Topics to be Covered:
4. Object-oriented design.
5. Debugging.

Syllabus Flexibility:
High. The students are free to chose a project based on the instructor's approval.

Assessment Methods:
1. Group meetings with faculty: initial proposal, code review, tracer-bullet implementation demo, final demo.
2. Design documents. Write-up.
4. Presentations.

the students give their final presentations and demos.
Also, each project team meets individually with the instructor at least four times during the semester. The agenda for each of the four meeting is as follows:

1. Team presents project idea and has it approved by instructor. (first month)
2. design/code review. Instructor goes over design/code with the team to point out problems and formalize requirements. Instructor determines requirements for tracer-bullet implementation. (second month)
3. Tracer-bullet implementation demo. Team shows that it has achieved full vertical integration functionality. Instructor notices missed requirements and reminds students of requirements for final project.(beginning of third month).

Final meeting. Verify requirements, design, documentation, testing, write-up, division of labor, etc. (last month).

Sessional Marks Allotment: Monthly Meeting
Participation: 10% Monthly Progress Reports: 15%
Design/code Document: 15% Presentation: 10%
Prototype Demonstration: 10% Final Project
Demonstration: 30% Final Project Report: 10%

General Software Engineering Tips:
Be careful when making major modifications and keep backups! A good motto: There is no such thing as a safe software change.
One of the biggest mistakes that even professional software teams make is modifying code at the last minute. Either resist the urge to make last minute changes, or keep them isolated and well-marked so that they can be backed out easily if necessary. Test, test, test!!! You must test your system thoroughly after making any change, no matter how small. Else you will not know if a bug was introduced! You will get no sympathy if you break your system at the last minute.

**Regression Testing:**
A good habit to get into: frequently run your program on an extensive test set.

Once you have a prototype, create a set of examples that your program handles correctly. Generate files of the input and the correct output as a test set.

When you make significant changes, run your program on the test set. If the output is different, then you will know that you’ve introduced a bug. (Or if the output is improved, you should update the test set.)

Put together an extensive regression set! If it alerts you to one major bug (and it always does), then it is time well spent.

After verifying that a new change is “safe”, save a version of your entire system! Never, EVER make changes to the saved version – it is a reliable version that you can recover in an emergency.

**Documentation:**
Get into the habit of documenting your code quickly as you go. If you think you’ll remember why you did something, you are probably wrong.

Computer scientists typically hate to do documentation. One reason is that they leave it all for the end!

Get into the habit of writing small comments as you go. A few comments, explaining what’s happening and why, can make a world of difference.

When you make a change, mark it with your initials, the date, a brief explanation, and an example. This will help enormously if the change needs to be removed or modified, and will prevent thrashing.

**Working as a Team:**
Be honest and realistic with your teammates when setting goals. If you fail to meet a promised deadline, it affects the whole team, not just you.

Communication is crucial! Don’t make major decisions by yourself, and let people know when you are behind or ahead of schedule.

Try to exploit each other’s strengths.
The industrial training will be for three weeks during the summer after third year second semester and assessment will be done in the 4th year first semester with a seminar on the training he/she got.
### B.TECH. (CSE) 4th Year II-Semester Scheme of Instruction and Examination with Effect from 2010-11 Admitted Batch

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<tr>
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**ELECTIVE-IV:**

Introduction to Distributed Systems, What is a Distributed System?, Hardware concepts, Software concepts, Design issues.


Synchronization in Distributed System, Clock Synchronization, Mutual Exclusion, Election algorithms, Atomic transactions, Deadlocks in Distributed Systems.

Process and processors in Distributed System threads, System Models, Processors allocation, Scheduling in Distributed System, Fault tolerance, Real time Distributed System.


Distributed Shared Memory, Introduction, What is Shared memory?, Consistency models, Page based Distributed Shared memory, Shared – variable Distributed Shared memory, Object based Distributed Shared Memory.

TEXT BOOK:
Distributed Operating Systems, Andrew S. Tanenbaum

Reference Book:
INTRODUCTION: The need for security-security approaches-principles of security-Plain Text and Cipher Text-
substitution and Transposition Techniques-Encryption and Decryption-Symmetric and Asymmetric Cryptography-
Stenography-key range and key size-types of attacks

SYMMETRIC KEY CRYPTOGRAPHIC ALGORITHMS: Algorithm types and modes-overview of symmetric key
cryptography-DES-IDEA-RC5-BLOWFISH-AES-Differential and Linear Cryptanalysis.

ASYMMETRIC KEY CRYPTOGRAPHIC ALGORITHMS: Overview of asymmetric key cryptography- RSA
algorithm-symmetric and asymmetric key cryptography together-digital signatures-knapsack algorithm-some other
algorithms.

PUBLIC KEY INFRASTRUCTURE: Introduction-Digital certificates- Private Key management-The
PKIX model-Public Key Cryptography Standards- XML, PKI and Security

INTERNET SECURITY PROTOCOLS: Basic concepts-SSL-SHTTP-TSP-SET-SSL versus SET- 3D
secure protocol-Electronic money-Email security-WAP security-security in GSM

USER AUTHENTICATION MECHANISMS: Introduction-Authentication basics-passwords- authentication
tokens-certificate based authentication-biometrics authentication-kerberos-SSO approaches

PRACTICAL IMPLEMENTATIONS OF CRYPTOGRAPHY/SECURITY: Cryptographic solutions using
Java-Cryptographic solutions using Microsoft-cryptographic toolkits-security and operating systems NETWORK
SECURITY: Brief Introduction to TCP/IP- firewalls-IP security-Virtual Private Networks- case studies on cryptography
and security.

TEXT BOOK:

REFERENCE BOOKS:
1) Network Security Private Communication in a public world, Charlie Kaufman, Radia
Perlman & Mike Speciner, Prentice Hall of India Private Ltd., New Delhi
Delhi
3) Network Security: The Complete Reference by Roberta Bragg, Mark Phodes-Ousley, Keith Strassberg
Tata Meagraw-Hill
1. Introduction to Data Mining:
   - Motivation and importance, What is Data Mining, Relational Databases, Data Warehouses, Transactional Databases, Advanced Database Systems and Advanced Database Applications, Data Mining Functionalities, Interestingness of a pattern Classification of Data Mining Systems, Major issues in Data Mining.
2. Data Warehouse and OLAP Technology for Data Mining
   - What is a Data Warehouse? Multi-Dimensional Data Model, Data Warehouse Architecture, Data Warehouse Implementation, Development of Data Cube Technology, Data Warehousing to Data Mining
3. Data Preprocessing
   - Why Pre-process the Data? Data Cleaning, Data Integration and Transformation Data Reduction, Discretization and Concept Hierarchy Generation
4. Data Mining Primitives, Languages and system Architectures, Data Mining Primitives: What defines a Data Mining Task?, A Data Mining query language, Designing Graphical Use Interfaces Based on a Data Mining Query language, Architectures of Data Mining Systems
5. Concept Description: Characterization and comparison, What is Concept Description? Data Generalization and summarization-based Characterization, Analytical Characterization: Analysis of Attribute Relevance, Mining Class Comparisons: Discriminating between different Classes, Mining Descriptive Statistical Measures in large Databases
6. Mining Association rule in large Databases, Association Rule Mining, Mining Single-Dimensional Boolean Association Rules from Transactional Databases, Mining Multilevel Association Rules from Transactional Databases, Mining Multidimensional Association Rules from Relational Databases and Data Warehouses, From Association Mining to Correlation Analysis, Constraint-Based Association Mining
7. Classification and prediction, Concepts and Issues regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Classification by Back-propagation, Classification Based on Concepts from Association Rule Mining, Other Classification Methods like k-Nearest Neighbor Classifiers, Case-Based Reasoning, Generic Algorithms, Rough Set Approach, Fuzzy Set Approaches, Prediction, Classifier Accuracy
8. Cluster Analysis
   - What is Cluster Analysis? Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods

Text Book:
Data Mining Concepts and Techniques, Jiawei Han and Micheline Kamber, Morgan Kaufman Publications

Reference Books:
1. Introduction to Data Mining, Adriaan, Addison Wesley Publication
2. Data Mining Techniques, A.K.Pujari, University Press
1. **INTRODUCTION TO SOA, EVOLUTION OF SOA**: Fundamental SOA; Common Characteristics of contemporary SOA; Benefits of SOA; A SOA timeline (from XML to Web Services to SOA); The continuing evolution of SOA (Standards organizations and Contributing vendors); The roots of SOA (comparing SOA to Past architectures).

2. **PRINCIPLES OF SERVICE – ORIENTATION**: Services-orientation and the enterprise; Anatomy of a service-oriented architecture; Common Principles of Service-orientation; Service orientation and Object-orientation; Service layer abstraction; Business service layer; Orchestration service layer;

3. **WEB SERVICES AND SOA**: The Web services framework; Services (as Web Services); Service Registry; Service descriptions (with WSDL); Messaging (with SOAP), Transactions, Coordination, Business Activity, Orchestration, Choreography; Addressing, Reliable Messaging, Policies, Metadata, Security, Notification and Events; Semantic Web Services; RESTful Services;

4. **BUSINESS PROCESS DESIGN**: Business Process Management basics; WS-BPEL language basics; WS-Coordination overview; Service oriented business process design; WS-addressing language basics; WS-Reliable Messaging language basics; Service Component Architecture basics;

5. **ENTERPRISE PLATFORMS AND SOA**: SOA platform basics; Enterprise Service Bus basics (including basic and complex patterns); SOA support in J2EE; SOA support in .NET; SOA Reference Architecture;

**Text Books:**


**References:**

FE 02 (FREE ELECTIVE) INTERNET TECHNOLOGIES Credits: 4

Instruction: 3 Periods & 1 Tut./Week  Sessional Marks: 30
Univ.-Exam: 3 Hours  Univ-Exam-Marks: 70

Introduction to internet - Internet history, IP address, DNS, e-mail.

HTML Common tags: List, Tables, images, forms, Frames; Cascading Style sheets;

Java Script: - Introduction to Java Scripts, Objects in Java Script, Dynamic HTML with Java Script


Java Beans: Introduction to Java Beans, Advantages of Java Beans, BDK, Introspection, Using Bound properties, Bean Info Interface, Constrained properties Persistence, Customizes, Java Beans API, Introduction to EJB’s


JSP Application Development: Generating Dynamic Content, Using Scripting Elements Implicit JSP Objects, Conditional Processing – Displaying Values Using an Expression to Set an Attribute, Declaring Variables and Methods Error Handling and Debugging Sharing Data Between JSP pages, Requests, and Users Passing Control and Date between Pages – Sharing Session and Application Data – Memory Usage Considerations


TEXT BOOKS:

3. Internet and World Wide Web – How to program by Dietel and Nieto PHI/Pearson Education Asia.
4. Advanced Java™ 2 Platform How to Program, Deitel/Deitel/Santry
3. Java Server Pages –Hans Bergsten, SPD O’Reilly

REFERENCE:

1. HTML Black Book: The Programmer's Complete HTML Reference Book by Steven Holzner
2. Core SERVLETS AND JAVASERVER PAGES VOLUME 2: CORE TECHNOLOGIES by Marty Hall and Larry Brown Pearson
CSE 4.2.4 DATA COMMUNICATIONS & NETWORK PROGRAMMING LAB Credits: 2

Lab: 3 Periods /week  Sessional Marks: 50
Univ.-Exam : 3 Hours  Univ-Exam-Marks:50

FIRST CYCLE OF EXPERIMENTS

1.1 PC-to-PC COMMUNICATIONS UNDER DOS WITH NULL MODEM
   a) Using Serial Ports and RS-232 C Cable Connection  b) Using Parallel Ports and Parallel Cable Connection

1.2 PC-to-PC COMMUNICATIONS UNDER DOS WITH MODEM and 4-LINE EXCHANGE
   Using Communication Software: COMIT or XTALK

1.3 PC-to-PC COMMUNICATIONS UNDER WIN 98's DIRECT CABLE CONNECTION with NULL MODEM
   a) Using Serial Ports and RS-232 C Cable Connection  b) Using Parallel Ports and Parallel Cable Connection

1.4 PC-to-PC COMMUNICATIONS UNDER WIN 98's DIAL-UP NETWORKING WITH MODEM and 4-LINE EXCHANGE

1.5 PC-to-PC COMMUNICATIONS UNDER WIN 98's HYPER TERMINAL WITH MODEM and 4-LINE EXCHANGE

1.6 a) LAN WITH BUS TOPOLOGY with a minimum of two systems
    i) Windows Peer-to-Peer Network  ii) Windows NT Client-Server Network
   b) LAN WITH STAR TOPOLOGY with a minimum of two systems

1.7 a) LAN WITH BUS TOPOLOGY with a minimum of two systems using NOVELL Netware
   b) LAN WITH STAR TOPOLOGY with a minimum of two systems using NOVELL Netware

SECOND CYCLE OF EXPERIMENTS

2.1 INTERNET CONNECTION SET-UP USING DIAL-UP NETWORKING

2.2 TERMINAL NETWORK WITH UNIX/LINUX SERVER and one or two Terminals

2.3 TERMINAL NETWORK WITH UNIX/LINUX SERVER, Terminal Server, and one or two terminals

2.4 NETWORK PROGRAMMING EXERCISE-I USING A SIMPLIFIED API
   Echo software( Develop echo client and echo server programs and run the two programs on separate computers and
   verify that they can communicate Chat software (Develop chat client and chat server programs and test to ensure they
   can communicate). Build a simple file transfer service that consists of client and server

2.5 NETWORK PROGRAMMING EXERCISE -II USING THE SOCKET API
   Write an echo client and server using sockets  Build a web server using sockets

2.6 CONCURRENT NETWORK PROGRAMMING EXERCISE –III
   Build a Concurrent server (threads) – Create a server capable of handling connections from multiple
   clients concurrently  Build a Concurrent file transfer server (processes) – Create separate processes to
   allow a server to handle multiple clients concurrently

2.7 NETWORK PROGRAMMING EXERCISE –IV USING PROTOCOL DESIGN
   Design a reliable data transfer protocol ( Devise, implement and test a protocol that provides reliable data
   transfer across a network that drops, delays or corrupts packets
   Design stop and wait flow control protocol  Design a sliding window protocol

2.7.1 NETWORK PROGRAMMING EXERCISE –V WITH PROTOCOLS FROM TCP/IP SUITE Build a
   domain name system client program
GUIDELINES for preparing the report of the Project Work

FORMAT FOR PREPARATION OF PROJECT REPORT

FOR

B. TECH.(CSE)

1. ARRANGEMENT OF CONTENTS:

The sequence in which the project report material should be arranged and bound should be as follows:

1. Cover Page & Title Page
2. Bonafide Certificate
3. Abstract
4. Table of Contents
5. List of Tables
6. List of Figures
7. List of Symbols, Abbreviations and Nomenclature
8. Chapters
9. Appendices
10. References

The table and figures shall be introduced in the appropriate places.

2. PAGE DIMENSION AND BINDING SPECIFICATIONS:

The dimension of the project report should be in A4 size. The project report should be bound using flexible cover of the thick white art paper. The cover should be printed in black letters and the text for printing should be identical.

3. PREPARATION FORMAT:

3.1 Cover Page & Title Page – A specimen copy of the Cover page & Title page of the project report are given in Appendix 1.

3.2 Bonafide Certificate – The Bonafide Certificate shall be in double line spacing using Times New Roman and Font Size 14, as per the format in Appendix 2.

The certificate shall carry the supervisor’s signature and shall be followed by the supervisor’s name, academic designation (not any other responsibilities of administrative nature), department and full address of the institution where the supervisor has guided the student. The term ‘SUPERVISOR’ must be typed in capital letters between the supervisor’s name and academic designation.

3.3 Abstract – Abstract should be one page synopsis of the project report typed double line spacing, Font Style Times New Roman and Font Size 14.
3.4 **Table of Contents** – The table of contents should list all material following it as well as any material which precedes it. The title page and Bonafide Certificate will not find a place among the items listed in the Table of Contents but the page numbers of which are in lower case Roman letters. One and a half spacing should be adopted for typing the matter under this head. A specimen copy of the Table of Contents of the project report is given in Appendix 3.

3.5 **List of Tables** – The list should use exactly the same captions as they appear above the tables in the text. One and a half spacing should be adopted for typing the matter under this head.

3.6 **List of Figures** – The list should use exactly the same captions as they appear below the figures in the text. One and a half spacing should be adopted for typing the matter under this head.

3.7 **List of Symbols, Abbreviations and Nomenclature** – One and a half spacing should be adopted or typing the matter under this head. Standard symbols, abbreviations etc. should be used.

3.8 **Chapters** – The chapters may be broadly divided into 3 parts (i) Introductory chapter, (ii) Chapters developing the main theme of the project work (iii) and Conclusion.

The main text will be divided into several chapters and each chapter may be further divided into several divisions and sub-divisions.

Each chapter should be given an appropriate title.

Tables and figures in a chapter should be placed in the immediate vicinity of the reference where they are cited.

Footnotes should be used sparingly. They should be typed single space and placed directly underneath in the very same page, which refers to the material they annotate.

3.9 **Appendices** – Appendices are provided to give supplementary information, which is included in the main text may serve as a distraction and cloud the central theme.

Appendices should be numbered using Arabic numerals, e.g. Appendix 1, Appendix 2, etc. Appendices, Tables and References appearing in appendices should be numbered and referred to at appropriate places just as in the case of chapters.

Appendices shall carry the title of the work reported and the same title shall be made in the contents page also.
3.10 **List of References** – The listing of references should be typed 4 spaces below the heading “REFERENCES” in alphabetical order in single spacing left–justified. The reference material should be listed in the alphabetical order of the first author. The name of the author/authors should be immediately followed by the year and other details.

A typical illustrative list given below relates to the citation example quoted above.

**REFERENCES**


3.10.1 **Table and figures** - By the word Table, is meant tabulated numerical data in the body of the project report as well as in the appendices. All other non-verbal materials used in the body of the project work and appendices such as charts, graphs, maps, photographs and diagrams may be designated as figures.

4. **Typing Instructions:**

The impression on the typed copies should be black in colour.

One and a half spacing should be used for typing the general text. The general text shall be typed in the Font style ‘Times New Roman’ and Font size 14.

* * * * *
TITLE OF PROJECT REPORT

A PROJECT REPORT

Submitted by

NAME OF THE CANDIDATE(S)

in partial fulfillment for the award of the degree

of

BACHELOR OF TECHNOLOGY

IN

COMPUTER SCIENCE AND ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE AND SYSTEMS ENGINEERING

ANDHRA UNIVERSITY AUTONOMOUS COLLEGE OF ENGINEERING

ANDHRA UNIVERSITY : VISAKHAPATNAM - 530003

MONTH & YEAR
SOME PERFORMANCE ASPECTS CONSIDERATIONS OF A CLASS OF ARTIFICIAL NEURAL NETWORK

A PROJECT REPORT

Submitted by

SANDHY. A

GAYATHRI. R

in partial fulfillment for the award of the degree

of

BACHELOR OF TECHNOLOGY

in

COMPUTER SCIENCE AND ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE AND SYSTEMS ENGINEERING

ANDHRA UNIVERSITY AUTONOMOUS COLLEGE OF ENGINEERING

ANDHRA UNIVERSITY:: VISAKHAPATNAM-530 003

MAY 2005
ANDHRA UNIVERSITY : VISAKHAPATNAM-530 003

BONAFIDE CERTIFICATE

Certified that this project report “...........TITLE OF THE PROJECT.............”

is the bonafide work of “...........NAME OF THE CANDIDATE(S).............”

who carried out the project work under my supervision.

<<Signature of the Head of the Department>>                  <<Signature of the Supervisor>>
SIGNATURE
<<Name>>
HEAD OF THE DEPARTMENT
<<Name>>
SUPERVISOR
<<Academic Designation>>
<<Department>>
<<Full address of the Dept & College >>
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