

II/IV B.TECH (IT) I – SEMESTER

B.TECH (IT) 2nd YEAR I-SEMESTER SCHEME OF INSTRUCTION AND EXAMINATION With effect from 2007-2008 admitted batch								
Sub.Ref.No.	Name of the Subject	Periods			Maximum marks			Credits
		Theory	Tutorial	Lab	Exam	Sessionals	Total	
IT 2.1.1	ELECTRONICS	3	1	-	70	30	100	4
IT 2.1.2	ELEMENTS OF ELECTRICAL ENGINEERING	3	1	-	70	30	100	4
IT 2.1.3	DATA STRUCTURES	3	1	-	70	30	100	4
IT 2.1.4	DISCRETE MATHEMATICAL STRUCTURES - I	3	1	-	70	30	100	4
IT 2.1.5	PROBABILITY STATISTICS & QUEUING THEORY	3	1	-	70	30	100	4
IT 2.1.6	DIGITAL LOGIC DESIGN	3	1	-	70	30	100	4
IT 2.1.7	ELECTRONICS LAB	--	--	3	50	50	100	2
IT 2.1.8	DATA STRUCTURES LAB	--	--	3	50	50	100	2
TOTAL CREDITS								28

IT2.1.1

ELECTRONICS
(Common with CSE 2.1.1)

Credits:4

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

Sessional Marks: 30
Univ-Exam-Marks:70

- 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 regulation – Shunt capacitor filter – Zener regulation.
- 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.

IT2.1.2 ELEMENTS OF ELECTRICAL ENGINEERING Credits:4

(Common with CSE 2.1.2)

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, Hysterisis loss.

Electromagnetic Induction_: Faraday's laws of Electromagnetic Induction, Induced E.M.F., Dynamically induced E.M.F., Statistically induced EMF, Self Inductance, Mutual Inductance.

D.C. Generators: D.C.Generator principle, construction of D.C. generator, E.M.F equation of D.C. generator, Types of D.C. generator, Efficiency, Characteristics of D.C. generator, Efficiency, Applications of D.C. generator

D.C. Motors: **D.C.** Motor principle, working of D.C.Motors. significance of back E.M.F., Torque equation of D.C. Motors, Types of D.C. Motors, Characteristics of D.C. Motors, Speed control methods of D.C. Motors, Applications of D.C. Motor. Testing of D.C. Machines : Losses and Efficiency, Direct load test and Swinburne's test.

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.

Three phase Inductance Motor: Induction Motor working principle. Construction of 3 Phase induction Motor, Principle of operation. Types of 3 phase induction Motor., Torque Equation of Induction Motor., slip – Torque characteristics., Starting Torque, Torque under running condition., Maximum Torque Equation., Power stages of Induction Motor., Efficiency Calculation of Induction Motor by direct loading.

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.

IT2.1.3

DATA STRUCTURES

Credits:4

(Common with CSE 2.1.3)

Instruction: 3 Periods & 1 Tut/week

Sessional Marks: 30

Univ. Exam : 3 Hours

Univ-Exam-Marks:70

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.

Recursion: Recursive Definition and Processes, Recursion in C and Recursive Implementation of Applications. Simulation of Recursion – Efficiency of Recursion.

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

Linked List: Operations – Implementation of Stacks, Queues and priority Queues in C. **Circular Lists:** Insertion, Deletion and Concatenation Operations _ Stacks and Queues as Circular Lists _ Doubly Linked Lists _ Applications.

Trees: Binary Trees Operations and Applications.

Binary Tree Representation: Node Representation – Implicit array Representation – Choice of Representation – Binary Tree Traversal – Threaded Binary Trees and their Traversal – Trees and their Applications

Sorting: General Background: Efficiency – The big O Notation – Efficiency of Sorting. Bubble Sort and Quick Sort and their Efficiency – Selection Sorting – Binary Tree Sort – Heap Sort – Insertion Sorts – Shell Sort – Address calculation Sort – Merge and Radix Sorts.

Searching: Basic Searching Techniques: Dictionary as an Abstract Data Type – Algorithmic Notation – Sequential Searching and its Efficiency – Binary Search – Interpolation Search.

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

Graphs and Their Application: Graphs: Application of Graphs – Representation of Graphs in C – Transitive closure – Warshall's Algorithm – Shortest Path Algorithm.

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:

1. Data Structures Using C and C++ Yddish Langsam, Moshe J. Augenstein and Aaron M. Tanenbaum, Prentice Hall Of India (2nd Edition) (Chapters 1 to 8)
2. Data Structures, Algorithms and Applications with C++, Sahani Mc-Graw Hill.

Note: All Implementation are Using C Language only.

IT2.1.4 DISCRETE MATHEMATICAL STRUCTURES - I Credits:4

(Common with CSE 2.1.4)

Instruction: 3 Periods & 1 Tut/week

Sessional Marks: 30

Univ. Exam : 3 Hours

Univ-Exam-Marks:70

Introduction: Sets-Operations on sets-relations-functions-Proof methods and problem solving strategies-Fundamentals of Logic- Logical inferences-Methods of proof of an implication-First Order logic and Other Proof methods-Rules of inference for quantified Propositions-Mathematical Induction

Elementary Combinatorics: Basics of Counting- Combinations and Permutations-Their Enumeration with and without repetition-Binomial coefficients-Binomial and Multinomial Theorems-The Principle of Inclusion-Exclusion.

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:

“Discrete Mathematics for computer scientists & Mathematicians” by Joe L. Mott, Abraham Kandel & T. P. Baker, Prentice Hall of India Ltd, New Delhi

Reference Books:

- 1) “Discrete mathematics and its applications” by Keneth. H. Rosen, , Tata McGraw- Hill Publishing Company, New Delhi
- 2) “ Discrete mathematics” by Richard Johnsonbaug, Pearson Education, New Delhi

IT2.1.5 PROBABILITY, STATISTICS & QUEUING THEORY Credits:4
(Common with CSE 2.1.5)

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 roperties.

Curve fitting using Principle of Least Squares.

Multivariate Analysis: Correlation, correlation coefficient, Rank correlation, Regression Analysis, Multiple Regression, Attributes, coefficient of Association, χ^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.

Small Sample Tests: Testing equality of .means, testing equality of variances, test of correlation coefficient, test for Regression Coefficient.

Large Sample tests: Tests based on normal distribution

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

Text Book: Probability, Statistics and Random Processes by T.Veerarajan, Tata McGraw Hill Reference Book: Probability & Statistics with Reliability, Queuing and Computer Applications by Kishor S. Trivedi , Prentice Hall of India ,1999

IT2.1.6

DIGITAL LOGIC DESIGN

Credits:4

(Common with CSE 2.1.6)

Instruction: 3 Periods & 1 Tut. /week

Sessional Marks: 30

Univ.-Exam : 3 Hours

Univ-Exam-Marks:70

1. Binary Systems, Boolean Algebra and Logic Gates.

Digital Systems. Binary Numbers. Number Base Conversions. Octal and Hexadecimal Numbers. Complements. Signed Binary Numbers. Binary Codes. Binary Storage and Registers. Binary Logic Basic Definitions. Axiomatic Definition of Boolean Algebra. Basic Theorems and Properties of Boolean Algebra. Boolean Functions. Canonical and Standard Forms. Other Logic Operations. Digital Logic Gates. Integrated Circuits.

2. Combinational Logic Design, Gate-Level Minimization.

The Map Method. Four-Variable Map. Five-Variable Map. Product of Sums Simplification. Don't-Care Conditions. NAND and NOR Implementation. Other Two- Level Implementations. Exclusive-OR Function. Hardware Description Language (HDL).

Combinational Logic

Combinational Circuits. Analysis Procedure. Design Procedure. Binary Adder- Subtractor. Decimal Adder. Binary Multiplier. Magnitude Comparator. Decoders. Encoders. Multiplexers. HDL For Combinational Circuits.

3. Sequential Logic Design, Synchronous Sequential Logic

Sequential Circuits. Latches. Flip-Flops. Analysis of Clocked Sequential Circuits. HDL For Sequential Circuits. State Reduction and Assignment. Design Procedure.

Registers ad Counters.

Registers. Shift Registers. Ripple Counters. Synchronous Counters. Other Counters. HDL for Registers and Counters.

Fundamentals of Asynchronous Sequential Logic

Introduction. Analysis Procedure. Circuits With Latches. Design Procedure. Hazards

4. Memory and Programmable Logic

Introduction. Random-Access Memory. Memory Decoding. Error Detection and Correction. Read-Only Memory. Programmable Logic Array. Programmable Array Logic. Sequential Programmable Devices.

TEXT BOOK : Digital Design, 3rd Edition, M. Morris Mano, Pearson Education, Inc.,2002

- REFERENCE BOOKS:**
1. Digital Logic Design Principles, Norman Balabanian and Bradley Carlson, John Wiley & Sons(Asia) Pte. Ltd., 2002
 2. Fundamentals of Digital Circuits, A. Ananda Kumar, PHI, 2002
 3. Digital Circuits and Design, 2nd Edition, S Salivahanan and S Arivazhagan, Vikas Publishing House Pvt. Ltd., 2003
 4. Fundamentals of Digital Logic with VHDL Design, Stephen Brown and Zvonko Vranesic, Tata McGraw-Hill Edition, 2002

IT 2.1.7

ELECTRONICS LAB

Credits:2

Lab: 3 Periods /week
Univ.-Exam : 3 Hours

Sessional Marks: 50
Univ-Exam-Marks:50

1. P-N Junction Diode Characteristics
2. Zener diode Characteristics
3. Transistor as Switch
4. CE characteristics
5. CE Amplifier
6. FET Characteristics
7. Half-Wave Rectifier
8. Full-Wave Rectifier

IT2.1.8

DATA STRUCTURES LAB

Credits:2

Lab: 3 Periods /week
Univ.-Exam : 3 Hours

Sessional Marks: 50
Univ-Exam-Marks:50

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

II/IV B.TECH (IT) II – SEMESTER

B.TECH (IT) 2 nd YEAR II-SEMESTER SCHEME OF INSTRUCTION AND EXMINATION With effect from 2007-2008 admitted batch								
Sub.Ref.No.	Name of the Subject	Periods			Maximum marks			Credits
		Theory	Tutorial	Lab	Exam	Sessionals	Total	
IT 2.2.1	SYSTEM PROGRAMMING	3	1	-	70	30	100	4
IT 2.2.2	DISCRETE MATHEMATICAL STRUCTURES - II	3	1	-	70	30	100	4
IT 2.2.3	MICROPROCESSORS	3	1	-	70	30	100	4
IT 2.2.4	COMPUTER ORGANIZATION	3	1	-	70	30	100	4
IT 2.2.5	OBJECT ORIENTED ANALYSIS AND DESIGN	3	1	-	70	30	100	4
IT 2.2.6	ENVIRONMENTAL STUDIES	3	1	-	70	30	100	2
IT 2.2.7	MICROPROCESSORS LAB	--	--	3	50	50	100	2
IT 2.2.8	OBJECT ORIENTED PROGRAMMING LAB	--	--	3	50	50	100	2
							TOTAL CREDITS	26

IT2.2.1

SYSTEMS PROGRAMMING

Credits 4

Instruction: 3 Periods & 1 Tut /week

Sessional Marks: 30

Univ-Exam : 3 Hours

Univ-Exam Marks:70

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 Dhamdhare
Tata Mc Graw Hill, IInd Revised Edition

IT2.2.2 DISCRETE MATHEMATICAL STRUCTURES - II Credits:4

(Common with CSE 2.2.2)

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- Complimented 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:

Discrete Mathematical Structures with applications to computer science by J. P. Trembley & R. Manohar Tata McGraw-Hill Publishing Company, New Delhi.

Reference Books:

- 1) Discrete and combinatorial mathematics by Ralph. G. Grimaldi Pearson Education, New Delhi
- 2) Elements of discrete mathematics by C. L. Liu, Tata McGraw-Hill Publishing Company, New Delhi.

IT2.2.3**Microprocessors**
(Common with CSE 2.2.3)**Credits:4**

Instruction: 3 Periods & 1 Tut /week

Sessional Marks: 30

Univ-Exam : 3 Hours

Univ-Exam Marks:70

The 8085A μ P. Architecture and Instruction Set:

Introduction to Microprocessors and Microcomputers, Internal Architecture and Functional/Signal Description of typical 8-bit μ P.- 8085, Instruction Set and Timing Diagrams of 8085 μ P.

Programming the 8085 μ P.:

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 μ P. 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 μ P.:

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:

1. Microprocessor Architecture, Programming, and Applications with the 8085 Ramesh S. Gaonkar, 4th Edition, Penram International, 1999
2. The 80x86 Family, Design, Programming and Interfacing, John E.Uffenbeck, 3rd Edition, Pearson Education Inc., 2002

REFERENCE BOOK:

1. IBM PC Assembler Language and Programming, Peter Abel, 5th Edition, Pearson Education Inc., 2001
2. The 8088 and 8086 Microprocessors, Programming, Interfacing, Software, Hardware and Applications, Water A. Triebel and Avtar Singh, 4th Edition, Pearson Education Inc., 2003
3. Microprocessors and Interfacing, Programming and Hardware, 2nd Edition, Douglass V. Hall, TMH Edition, 1999

IT2.2.4**COMPUTER ORGANIZATION****Credits:4**

(Common with CSE 2.2.4)

Instruction: 3 Periods & 1 Tut /week

Sessional Marks: 30

Univ-Exam : 3 Hours

Univ-Exam Marks:70

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:

Computer System Architecture, M.Morris Mano ,Third Edition, Pearson Education Inc., 2003

Reference Book:

Computer Systems Organization and Architecture, John D. Carpinelli ,Pearson Education Inc., 2003

IT2.2.5 OBJECT ORIENTED ANALYSIS AND DESIGN Credits:4

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

Sessional Marks: 30
Univ-Exam Marks:70

1. BASICS OF OBJECT ORIENTED PROGRAMMING: Introduction to Object Oriented Paradigm- procedural Paradigm – An overview of classes, objects and Methods inheritance and polymorphism.

2. Basics OF C++: Structure of a c++ program - preprocessor directives-data types and declaration- Expressions and operator precedence-Program flow control-functions-scope of variables-default arguments-dynamic allocation-new and delete operators.

3. DATA ABSTRACTION: Classes as objects, user defined data types, constructors & destructors, controlling and accessibility, class members, member functions, implementation of classes.

4. INHERETANCE: Derived classes-syntax of derived classes - access to the base class-overloading inherited member function- multiple inheritance- virtual base class virtual functions and polymorphism, static and dynamic bindings - virtual functions - pure virtual functions - dynamic binding through virtual functions- virtual function call mechanism - implications of polymorphism use of classes - virtual destructors - calling virtual functions in a base class constructor

C++ I/O- standard functions using C functions -Stream I/O in C++ -Manipulators - Formatted I/O- Overloading << and >> Operators -File I/O

5. POLYMORPHISM: Overloading functions and operators-runtime polymorphism-over loading new and delete operators.

6. Templates: Generic Classes using Macros - Class Templates - Function templates - Advantages of Templates.

7. EXCEPTION HANDLING IN C++: Benefits of exception handling troubles with standard C functions (setjmp and longjmp)-Proposed exception handling mechanism for C++

8. OBJECT ORIENTED DESIGN: Trends in software design-Notation for objects-Hybrid design methods -separation of Responsibilities-driven design-design phases and tools-step by step design-grady booch approach.

9. Introduction to U.M.L : Description of various U.M.L. Diagrams with examples.

Text Books:

1. Object oriented Programming using C++: E. Balagurusamy, PHI.
2. The Unified Modeling Languages user Guide by Grady Booch Etal.(Pearson Education)

References:

1. Object Oriented Programming in C++: N. Barkakati, PHI
2. Object Oriented Programming through C++ by Robot Laphore.

3. Object Oriented Analysis and Design by Andrew Haigh – (Tata Mcgrah Hill.)

IT2.2.6

ENVIRONMENTAL STUDIES

Credits:2

(Common with CSE 2.2.6)

Instruction: 3 Periods & 1 Tut /week

Sessional Marks: 30

Univ-Exam : 3 Hours

Univ-Exam Marks:70

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 –Grass land -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
- (f) Environmental Impact Assessment (4 lectures)

Module 8: Social Issues and the Environment

- (a) Population growth and environment
- (b) Environmental education
- © Environmental movements
- (d) Environment vs Development (2 lectures)

Module 9: Institutions and Governance

- (a) Regulation by Government
- (b) Monitoring and Enforcement of Environmental regulation
- © 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 (5 lectures)

Module 10: International Conventions

- (a) Stockholm Conference 1972
- (b) Earth Summit 1992
- © World Commission for environmental Development (WCED) (2 lectures)

Module 11: case Studies

- (a) Chipko movement
- (b) Narmada Bachao Andolan
- © 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 Hazzare)
- (i) Kolleru lake-aquaculture
- (j) Florosis in Andhra Pradesh (3 lectures)

Module 12: Field Work

- (a) Visit to a local area to document and mapping environmental assests- 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, affluent treatment plants. (5 lectures)

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IT2.2.7

MICROPROCESSORS LAB Credits: 2

Lab: 3 Periods/week
Univ-Exam : 3 Hours

Sessional Marks: 50
Univ-Exam Marks:50

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 8085 μ P Trainer.
Serial Monitor of 8085 μ P Trainer with Terminal
8085 Line Assembler of 8085 μ P Trainer with PC as Terminal
8085 Cross Assembler using In-Circuit Emulator (ICE) with 8085 μ P 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

IT2.2.8 OBJECT ORIENTED PROGRAMMING - LAB Credits:2

Lab: 3 Periods/week
Univ-Exam : 3 Hours

Sessional Marks: 50
Univ-Exam Marks:50

PART - A

1. Define a class Complex and overload operators + , - , * , << , >> for complex numbers.
2. Define a class Matrix and overload operators + , - , * , << , >>.
3. Define a class String and write a C++ program to overload + for concatenation, >= , <= , == for comparison of two strings.
4. Define a class Set whose objects are integers. Write a C++ program to implement member functions Set (int SZ = 0), Void insert (int x), int find (int x) , Void unionset (set, set) , Void intersection (set, set) , void difference (set, set) .
5. Define a basic two-dimensional Shape class from which objects such as rectangle, circle which can be derived. Let the user specify the position, size, of drawing 2-D object.
6. Implement 'static class member function' using class Item which has a static member count.

PART – B

1. Implement Stack operations insertion, deletion
 - (a) Infix to postfix conversion
 - (b) Postfix evaluation
 - (c) Extend insertion and deletion with exception handling and templates
2. Implement Queue operations insertion, deletion
 - (a) Extend insertion and deletion with exception handling and templates
3. Implement Linked list operations insertion, deletion, traversal, concatenation.
 - (a) Implement polynomial addition with linked list
 - (b) Implement polynomial multiplication with linked list
 - (c) Extend these operations with exception handling and templates
4. Implement tree operations insertion, searching, postorder traversal, inorder traversal, preorder traversal, deletion.
 - (a) Extend these operations with exception handling and templates
5. Implement Queue operations using linked list.
6. Implement Stack operations with linked list.
7. Implement operations on Double linked list.

III/IV B.TECH (IT) I – SEMESTER

B.TECH (IT) 3rd YEAR I-SEMESTER SCHEME OF INSTRUCTION AND EXAMINATION With effect from 2007-2008 admitted batch								
Sub.Ref. No.	Name of the Subject	Periods			Maximum marks			Credits
		Theory	Tutorial	Lab	Exam	Sessionals	Total	
IT 3.1.1	DATA COMMUNICATION	3	1	-	70	30	100	4
IT 3.1.2	INTERNET CONCEPTS & JAVA PROGRAMMING	3	1	-	70	30	100	4
IT 3.1.3	COMPUTER GRAPHICS	3	1	-	70	30	100	4
IT 3.1.4	FORMAL LANGUAGES & AUTOMATA THEORY	3	1	-	70	30	100	4
IT 3.1.5	FILE STRUCTURES	3	1	-	70	30	100	4
IT 3.1.6	OPERATING SYSTEMS	3	1	-	70	30	100	4
IT 3.1.7	OPERATING SYSTEMS LAB	--	--	3	50	50	100	2
IT 3.1.8	JAVA PROGRAMMING LAB	--	--	3	50	50	100	2
IT 3.1.9	SOFT & COMMUNICATION SKILLS LAB	--	--	3	25	--	25	1
TOTAL CREDITS								29

IT3.1.1**DATA COMMUNICATIONS****Credits:4**

Instruction: 3 Periods & 1 Tut /week

Sessional Marks: 30

Univ. Exam : 3 Hours

Univ-Exam-Marks:70

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:

Guided Transmission Media, Wireless Transmission Data Encoding, Digital Data, Digital Signals, Digital

Data, Analog Signals, Analog Data, Digital Signals, Analog Data, Analog Signals

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

Introduction, Basic Terminal Components, Enhanced Terminal Components, General-Purpose Terminals, Remote Job Entry Terminals, Transaction Terminals, Clustering of Terminal Devices. Communications Processing Hardware Introduction, Switching Processors, Multidrop Lines, Multiplexers, Concentrators, Front-End Processors.

5. Modems:

Network Attachment and Regulations, Line Conditioning and Leased Lines, Modems and Modem Circuits. Multiplexing: Frequency-Division Multiplexing, Synchronous Time-Division Multiplexing: Characteristics, TDM Link Control, Digital Carrier Systems Statistical Time-Division Multiplexing: Characteristics.

TEXT BOOKS:

1. William Stallings, Data and Computer Communications, 7th Edition, Pearson Education Inc., 2004
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:

1. Behrouz A. Forouzan, Data Communications and Networking, 3rd Edition TMH, 2004
2. William A. Shay, Understanding Data Communications & Networks, 2nd Edition Thomson-Brooks/Cole - Vikas publishing House, 1999
3. Michale A. Miller, Data & Network Communications, Thomson/Delmar - Vikas Publishing House, 2000

IT3.1.2 INTERNET CONCEPTS & JAVA PROGRAMMING Credits:4

Instruction: 3 Periods & 1Tut/Week
Univ_Exam:3 Hours

Sessional Marks: 30
Univ_ Exam Marks:70

Fundamentals: HTML, OOP Concepts, Comparing JAVA with C & C++,JAVA Programming language Syntax, Variables, Data types, statements and expressions.

Control Statements: If else, for, while, and do while loops, Switch statements.

Arrays & Structures: One Dimensional & Two Dimensional Arrays, Named Structures.

Functions: Parameter Passing, Static Modifier.

Features of JAVA: Classes and Interfaces, Threads and multithreaded programming, Exception handling, Introduction to packages, Math package, Lang package, Util package.

Applet Programming: Events, Event driven programming, Events like buttons, mouse, keyboards etc., Applets, Applets package, Fonts, colours, Graphics, images. AWT components, layout managers, writing event driven program using components.

Networking:

Networking Basics: Socket overview, Client/Server, Reserved sockets. Proxy servers, Internet addressing; Java and the net, Inet address, TCP/IP client sockets, URL, URL connection, TCP/IP server sockets, Datagrams.

Textbook:

1. "Introduction to Java programming, a primar ", Balaguruswamy.
2. Java Complete Reference , Herbt Schild.

Reference Book: "Introduction to Java programming", Daneal/Young PHI

IT3.1.3

COMPUTER GRAPHICS

Credits:4

Instruction: 3 Periods & 1Tut/Week

Sessional Marks: 30

Univ_Exam:3 Hours

Univ_Exam Marks:70

Introduction: Usage of Graphics and their applications, Presentation Graphics- Computer Aided Design- Computer Art- Entertainment- Education and Training- Visualization- Image Processing- Graphical User Interfaces

Over view of Graphics systems: Video Display Devices- Raster Scan systems-random scan systems-Graphics monitors and workstations-Input devices-hard copy devices- Graphics software

Output primitives: Points and Lines-Line Drawing Algorithms- Loading the Frame buffer- Line function- Circle- Generating Algorithms- Ellipse Generating Algorithms- Other Curves- Parallel Curve Algorithms-Curve Functions-Pixel Addressing- Filled Area Primitives-Filled Area Functions- Cell Array- Character Generation

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 Geometric and Modeling Transformations: Translation- Rotation-scaling-Other Transformations-Composite Transformations-3D Transformation Functions-Modeling and Coordinate Transformations.

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:

- 1) Procedural Elements for Computer Graphics by David F. Rogers, Tata McGraw Hill Book Company, New Delhi, 2003
- 2) Computer Graphics: Principles & Practice in C by J. D. Foley, S. K Feiner, A Van Dam F. H John, Pearson Education, 2004

- 3) Computer Graphics using Open GL by Francis S Hill Jr Pearson Education, 2004.

IT3.1.4 FORMAL LANGUAGES AND AUTOMATA THEORY Credits: 4
(Common with CSE 3.1.4)

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 Automate.

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.

IT3.1.5

FILE STRUCTURES

Credits:4

(Common with CSE 3.1.5)

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 tree, simple prefix B⁺

content of the index: separators instead of keys, the simple tree
prefix B

maintenance, index set block size, internal set block size, internal structure of index set blocks: a variable

□ B⁺ treeorder 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

Extendable hashing

Working of extendable 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

IT3.1.6

OPERATING SYSTEMS

Credits:4

(Common with CSE 3.1.6)

Instruction: 3 Periods & 1 Week./Week

Sessional Marks : 30

Univ_ Exam : 3 Hours

Univ_ Exam Marks:70

Introduction: What IS OS; History of Operating Systems, Operating System Concepts, Operating Systems Structure

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

File Systems And Input/Output : Files, Directories, File system implementation, Security, Protection mechanism, Principles of I/O Software, Disk Management

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

Case Study : Unix: Fundamental Concepts in Unix, MS – DOS: Fundamental Concepts in MS-DOS

Text Book: Modern Operating Systems by Andrew S. Tanenbaum

Reference: Applied Operating Systems Concepts by Avi Silberschatz, Peter Galvin, Grey Gagne

IT3.1.7**OPERATING SYSTEMS LAB****Credits:2**

Lab: 3 periods/week
Univ_Exam: 3 hours.

Sessional Marks: 50
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.
2. Programs for error reporting using `errno`, `perror()` function.
3. Programs using pipes.
4. Shell programming.
5. Programs to simulate process scheduling like FCFS, Shortest Job First and Round Robin.
6. Programs to simulate page replacement algorithms like FIFO, Optimal and LRU.
7. Programs to simulate free space management.
8. Programs to simulate virtual memory.
10. 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.

IT3.1.8

JAVA PROGRAMMING LAB

Credits:2

Lab: 3 periods/week
Univ_Exam: 3 hours.

Sessional Marks: 50
Univ_Exammarks: 50

1. (a) Program to display the area of a rectangle.
(b) Program to find Sum of series $1+x+x^2+x^3+\dots$.
2. (a) Write a class to display the area of rectangle and inherit this class into other class which is displaying perimeter of a rectangle and implement.
(b) Write a class to add three no's inherit this class into other class to add five no's and implement it.
3. (a) write a program to print the path, filename and extension for a given path of a file.
(b) write a program to receive two command line arguments check whether they are equal or not.
4. (a) A program to take two arguments and divide the first argument with second argument and display the result. Display the error message if divide by zero without abnormal exit.
(b) A program to accept more than one string and arrange them in alphabetical order.
(c) Write a program to display simultaneously output of even and odd numbers starting from one to specified number.
5. Write a program to accept data from keyboard and write it into a file.
6. Write a java program to implement stack & Queue operations.
7. Write a program to draw line and circle using mouse.
8. Write a applet program for drawing the bar chart..
9. Write a applet program to design a calculator for implementing basic functions like +,-,*, /.
10. Write a program to check active ports in system.

III/IV B.TECH (IT) II- SEMESTER

B.TECH (IT) 3rd YEAR II-SEMESTER SCHEME OF INSTRUCTION AND EXAMINATION With effect from 2007-2008 admitted batch								
Sub.Ref.No.	Name of the Subject	Periods			Maximum marks			Credits
		Theory	Tutorial	Lab	Exam	Sessionals	Total	
IT 3.2.1	COMPILER DESIGN	3	1	-	70	30	100	4
IT 3.2.2	DESIGN & ANALYSIS OF ALGORITHMS	3	1	-	70	30	100	4
IT 3.2.3	DATA BASE MANAGEMENT SYSTEMS	3	1	-	70	30	100	4
IT 3.2.4	COMPUTER NETWORKS	3	1	-	70	30	100	4
IT 3.2.5	WEB TECHNOLOGIES	3	1	-	70	30	100	4
IT 3.2.6	OPERATION RESEARCH	3	1	-	70	30	100	4
IT 3.2.7	WEB TECHNOLOGIES LAB	--	--	3	50	50	100	2
IT 3.2.8	DATA BASE MANAGEMENT SYSTEMS LAB	--	--	3	50	50	100	2
TOTAL CREDITS								28

Instruction: 3 Periods & 1 Week./Week
Univ_ Exam : 3 Hours

Sessional Marks : 30
Univ_ Exam Marks:70

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.

Design of Parsers:

Shift Reduce parser, Operator Precedence Parser, Predictive Parser, LR parser, SLR parser. LALR parser.

Syntax Directed Translation:

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

Intermediate Code Optimization:

The principle sources of optimization, Loop Optimization, DAG, Global data flow analysis.

Code Generation:

Problems, Machine model, A simple code generator, Register allocation and assignment, Code generation from DAG, Peep hole optimization.

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:

Compiler Construction by Kenneth. C. Loudon, Vikas Pub. House.

IT3.2.2 DESIGN AND ANALYSIS OF ALGORITHMS Credits:4

(Common with CSE 3.2.2)

Instruction: 3 Periods & 1 Tut /week

Sessional Marks: 30

Univ. Exam : 3 Hours

Univ-Exam-Marks:70

Introduction – Fundamentals of algorithmic problem solving – important problem types – fundamental data structures.

Fundamentals of analysis of algorithms and efficiency – Analysis framework – Asymptotic Notations and Basic Efficiency classes – Mathematical Analysis of Non-recursive Algorithms – Mathematical Analysis of recursive Algorithms – Empirical Analysis of Algorithms – Algorithm Visualization

Brute Force – Selection Sort and Bubble sort – Sequential Search and Brute – Force String Matching – Closest Pair and Convex-Hull Problems by Brute Force – Exhaustive Search

Divide-and-Conquer – Mergesort – Quicksort – Binary Search – Binary Tree Traversals and Related Properties – Multiplication of large integers and Strassen’s Matrix Multiplication – Closest-Pair Convex-Hull Problems by Divide- and – Conquer

Decrease – and – Conquer – Insertion Sort – Depth-First Search and Breadth-First Search- Topological Sorting – Algorithms for Generating Combinatorial Objects – Decrease-by-a-Constant-Factor Algorithms – Variable-Size-Decrease Algorithms

Transform-and-Conquer – Presorting – Gaussian Elimination – Balanced Search Trees – Heaps and Heapsort – Horner’s Rule and Binary Exponentiation – Problem Reduction

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

Dynamic Programming – Computing a Binomial Coefficient – Warshall’s and Floyd’s Algorithm – Optimal Binary Search Trees - The Knapsack Problem and Memory Functions.

Greedy Technique – Prim’s Algorithm – Kruskal’s Algorithm – Dijkstra’s Algorithm – Huffman Trees Limitations of Algorithm Power – Lower-Bound Arguments – Decision Trees – P, NP and NP – complete problems – Challenges of Numerical Algorithms

Coping with the Limitations of Algorithms Power – Backtracking – Branch-and-Bound – Approximation Algorithms for NP-hard Problems – Algorithms for solving Nonlinear Equations.

Text Book:

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

Reference Books:

1. Introduction to Algorithms by Thomas H. Corman, Charles E. Leiserson, Ronald R. Rivest & Clifford Stein, Prentice Hall of India, New Delhi, New Delhi
2. The Design and Analysis of computer Algorithms, Aho, Hopcroft & Ullman, Pearson Education, New Delhi, 2003
3. Fundamentals of algorithmics, Gilles Brassard & Paul Bratley, Prentice Hall of India, New Delhi

IT3.2.3

DATABASE MANAGEMENT SYSTEMS

Credits:4

(Common with CSE 3.2.3)

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

Sessional Marks: 30
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

IT3.2.4

COMPUTER NETWORKS

Credits:4

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

Sessional Marks: 30
Univ-Exam-Marks:70

Local Area Networks: LAN Overview.
High Speed LANs: Ethernet, Token Ring.
Wireless LANs.

Wide Area Networks: Circuit Switching and Packet Switching
Routing in Switched Networks
Principles of Cellular Networks

Internet Protocols: Basic protocol functions
Principles of Internetworking
Connectionless Internetworking
Internet Protocol

Transport protocols: Connection oriented Transport Protocol Mechanisms
TCP, TCP Congestion Control
UDP

Distributed Applications: E-Mail, HTTP

Textbooks:

1. WILLIAM STALLINGS, Data and Computer Communications, Seven Edition, Pearson Education Asia,2004

Reference Books:

1.ANDREW S.TANENBAUM , Computer Networks, 4th Edition, Pearson Education,2003

2.WILLIAM A.SHAY ,Understanding Communications and Networks ,3rd Edition ,Thomson Asia/ Vikas Publishing,2004

IT3.2.5

WEB TECHNOLOGIES

Credits:4

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

Sessional Marks: 30
Univ-Exam-Marks:70

Introduction: Java, Distributed computing and J2EE: Requirements of web architecture, web application lifecycle, XML and J2EE, the package of J2EE Applications, Java Script.

The Design and Development of a J2EE Application : J2EE Layers, J2EE Application Components, J2EE Architecture, Development Methodology and process, sample applications introduced; Task list for building J2EE Applications: Completing prerequisite Tasks, designing the database, creating tables and columns, defining the application, creating a backend interface, creating the interface, building pages, creating data access objects, validating your code, refining your code.

JDBC: Introduction; JDBC Architecture: API and Drives, The JDBC API, Retrieving and updating Data, SQL-to-Java Data Types, JDBC Execution Types, Metadata, Scrollable Resultsets, updating rows, transaction support, Batch Statements, JDBC 2.1 New Data Types, JDBC 2.0 Optional package API.

Servlets: What are Servlets?, Benefits of Servlets, use as controller in MVC and the sample application, basic HTTP, servlet container, Servlets API, service method detail, HML clients, servlet lifecycle, HTTP response header, session management, dispatching requests, Servlets with JDBC, web applications.

Java server pages: introduction: features of JSP Pages, the components of a JSP page, de4veloping and deploying JSP pages, JSP architectures; practical development with tag libraries: JSP syntax, Tag libraries

Enterprise JavaBeans: Introduction; Enterprise JavaBeans overview, distributed programming overview, EJB framework, Session and entity Beans, Attributes of a Bean, Parts of a Bean, container-managed persistence(CMP) and bean managed, the lifecycle of enterprise JavaBeans, java message service (JMS) and message driven beans (MDB), distributed programming services, common object request broker architecture (CORBA) and remote method invocation (RMI), Transaction and transaction management, Security, deployment, personal roles for EJB Development, building session beans: creating session beans, Entity beans.

Text Book:

J2EE UNLEASHED – Joseph J. Bambara, Paul R.Allen, Mark Ashnault, Ziyad Dean, Thomas Garben, Sherry Smith – SAMS Techmedia

Reference Book:

The J2EE Tutorial- Stepahnie Bodoff, Dale Green, Kim Hasse, Eric Jendrock, Monica Pawlan, Beth Stearns-Pearson Education –Asia.

IT3.2.6

OPERATIONS RESEARCH

Credits:4

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

Sessional Marks: 30
Univ-Exam-Marks:70

Overview of operations Research: OR models – OR Techniques

Linear Programming: Introduction – Graphical solution; Graphical sensitivity analysis – The standard form of linear programming problems – Basic feasible solutions - unrestricted variables – simplex algorithm – artificial variables – Big M and two phase method – Degeneracy - alternative optima – unbounded solutions – infeasible solutions.

Dual problems- Relation between primal and dual problems – Dual simplex method

Transportation model – starting solutions. North West corner Rule - lowest cost method –Vogels approximation method – Transportation algorithms –Assignment problem – Hungarian Method.

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.

Game theory: Two person Zero Sum Games – Mixed strategy games and their Algorithms.

Books:

1. Introduction to Operations Research by HILLIER/LIEBERMAN, Tata McGraw Hill
2. Operations Research by R Panneerselvan, Prentice Hall of India.

IT3.2.7**WEB TECHNOLOGIES LAB****Credits:2**

Lab: 3 Periods/week

Sessional Marks: 50

Univ-Exam : 3 Hours

Univ-Exam-Marks: 50

Each student should develop two projects out of this list using JSP,JDBC,J2EE

1. Design Airlines Ticket Reservation System
2. Design ONLINE Banking system.
3. Design Library Information system
4. Design Gram Panchayat Information system for House tax, water tax, wealth tax, Library tax collection, phone bill, Electricity bill collection
5. Design student information system portal which maintain attendance, marks etc.
6. Design online examination system.

IT3.2.8**DBMS LAB****Credits:2**

Lab: 3 Periods/week

Sessional Marks: 50

Univ-Exam : 3 Hours

Univ-Exam-Marks: 50

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 RDMSs)

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.

IV/IV B.TECH (IT) I – SEMESTER

B.TECH (IT) 4 th YEAR I-SEMESTER SCHEME OF INSTRUCTION AND EXAMINATION With effect from 2007-2008 admitted batch								
Sub.Ref.No.	Name of the Subject	Periods			Maximum marks			Credits
		Theory	Tutorial	Lab	Exam	Sessionals	Total	
IT 4.1.1	OBJECT ORIENTED SOFTWARE ENGINEERING	3	1	--	70	30	100	4
IT 4.1.2	NETWORK PROTOCOLS	3	1	--	70	30	100	4
IT 4.1.3	ADVANCE OPERATING SYSTEMS	3	1	--	70	30	100	4
IT 4.1.4	MANAGEMENT PRINCIPLES	3	1	--	70	30	100	4
IT 4.1.5	ELECTIVE – I	3	1	--	70	30	100	4
IT 4.1.6	NETWORK PROGRAMMING LAB	--	--	3	50	50	100	2
IT 4.1.7	OBJECT ORIENTED SOFTWARE ENGINEERING LAB	--	--	3	50	50	100	2
	INDUSTRIEL TRAINING							2
TOTAL CREDITS								26

Elective - I : [1] Satellite and Mobile Communications [2] Embedded systems
 [3] Visual Programming Techniques [4] Combinatorics & Graph Theory
 [5] Random Processes in Computer Engineering [6] Artificial Intelligence

IT4.1.1 Object Oriented Software Engineering Credits:4
(Common with CSE 4.1.1)

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

Sessional Marks: 30
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 Laganriere
McGraw-Hill Higher education

IT4.1.2

NETWORK PROTOCOLS

Credits:4

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

Sessional Marks: 30
Univ-Exam-Marks:70

IP ADDRESSING: Decimal Notation-Classes- special addresses - A simple Internet-Unicast and Broadcast addresses - Applying for IP addresses-Private networks.

SUBNETTING AND SUPERNETTING: Subnetting- Masking-Examples of Subnetting – Variable length Subnetting- Supernetting.

INTERNET PROTOCOL: Data gram-Fragmentation-Options- Checksum- IP design.

ARP and RARP: ARP- ARP design – RARP

INTERNET CONTROL MESSAGE PROTOCOL: Types of Messages- Message formats- Error reporting- Query- Checksum- ICMP design.

INTERNET GROUP MANAGEMENT PROTOCOLS: Multicasting- IGMP-Encapsulation- Multicast Backbone- IGMP design.

USER DATAGRAM PROTOCOL: Process to process communication-User datagram – Checksum- UDP operation- uses of UDP – UDP design.

TRANSMISSION CONTROL PROTOCOL: Process to Process communication -TCP Services – Segment - Options- Checksum-Flow control- Error Control- TCP Timers-Connection-State Transition Diagram-Congestion Control-TCP operation- TCP Design.

APPLICATION LAYER AND CLIENT-SERVER MODEL: Client-server Model-Concurrency-Processes

BOOTP and DHCP: BOOTP-DHCP

DOMAIN NAME SYSTEM: Name Space-Domain name Space-Distribution of Name space-DNS in the Internet-Resolution- DNS Messages- Types of Records-Compression-DDNS-Encapsulation.

TELNET AND RLOGIN: Concept-Network Virtual Terminal- NVT character set -Embedding-Options-Option Negotiation-Sub option Negotiation-Controlling Server-Out of Band signaling –Escape character-Mode of Operation-Examples- User Interface- Rlogin-Security Issue.

FILE TRANSFER PROTOCOL: Connections- Communication-Command Processing-File Transfer-User Interface-Anonymous FTP.

TRIVIAL FILE TRANSFER PROTOCOL: Messages- Connection- Data Transfer-UDP ports- Tftp Example-TFTP options -Security-Applications.

HYPertext TRANSFER PROTOCOL: HTTP overview-Proxy-Gateway-Tunnel-Cache-Messages-General Header Fields-Cache Control-Connection-Request Methods-Request Header Fields-Response Messages-Response Header Fields-Entity Header Fields-Client/Server Authentication. □

SOCKET INTERFACE: Definitions-Sockets-Byte ordering- Address Transformation-Byte manipulation Function-Information about Remote Host- Socket System Calls- Connectionless Iterative server- UDP Client/Server Programs-Connection oriented Concurrent Server - TCP Client/Server Programs.

Text Book: TCP/IP Protocol Suite. Behrouz A. Forouzan (TMH edition)

Reference Book: Internetworking with TCP/IP. D. E. Comer (PHI publications).

IV/IV B. Tech (IT) 1st Semester

IT4.1.3

ADVANCED OPERATING SYSTEMS

Credits:4

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

Sessional Marks: 30
Univ-Exam-Marks:70

Introduction to Distributed Systems: Goals – Advantages of distributed systems over centralized systems – disadvantages of distributed systems, Hardware & Software Concepts, loosely coupled systems, network operating systems, Network file systems, design Issues – transparency – Flexibility – performance – scalability.

Network and protocols: An introduction to Computer networking , Network technologies , LAN, WAN, Protocols, Technology case study, ATM, The Client – Server Model

Remote Procedure Calling: Introduction , Features of RPC, User package, Design issues, Classes of RPC system , Interface definition language, exception handling, delivery guarantees, implementation , interface processing , binding, Locating the binder, RPC in Unix system

Synchronization in Distributed systems: Clock synchronization, Logical Clocks, Physical Clocks, Clock synchronization algorithms, Mutual exclusion, A centralized algorithms, A distributed algorithms, A token ring algorithms, comparison of the three algorithms, Election algorithms, The Bully algorithms, Ring algorithms, Dead Locks in distributed systems, Distributed deadlock detection.

Process and Processors in distributed systems: Threads, Introduction, Usage, Design issues for thread packages, An example for thread packages, System models, The workstation model, The processor pool model, The hybrid model , Processor allocation, Allocation models, Design issues, Implementation issues.

Distributed File and Directory Services: Distributed file service requirements, File service components , Flat file service , Directory Service, Client module, Design issues, implementation techniques.

Distributed shared memory Introduction: 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.Tanenbanm

Reference Book: Advanced Concepts in Operating Systems, Singhal and Niranjana G.Shivaratna

IT4.1.4

MANAGEMENT PRINCIPALES

Credits:4

(Common with CSE 4.1.4)

Instruction: 3 Periods & 1 Tut. /Week

Sessional Marks: 30

Univ.-Exam : 3 Hours

Univ-Exam-Marks:70

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:

Principles of Management , PC Tripathi, PN Reddy, Second Edition, Tata McGraw-Hill.

IT4.1.5 Elective -1 SATELLITE & MOBILE COMMUNICATIONS Credits:4

Instruction: 3+1 Periods /Week
Univ Exam: 3 Hours

Sessional Marks: 30
Univ Exam Marks: 70

Principles of satellite communications: Evolution and growth of communication satellites, synchronous satellites, satellite frequency allocation and band spectrum, general and technical characteristics of satellite communication systems, advantage of satellite communication systems, active and passive satellites, advent of digital satellite communications.

Communication satellite link design: Introduction, General link design Equations, System Noise temperature, C/N and G/T ratio. Atmospheric and Ionospheric effects on link design, Uplink design, complete link design, interference effects on complete link design, earth station parameters.

Multiple Access Techniques: Introduction, TDMA, TDMA frame structure, TDMA Burst structure, TDMA frame efficiency, TDMA super frame. CDMA.

Satellite Subsystems and Global Mobile Satellite systems: Introduction, Electric power supply, attitude and orbit control, propulsion subsystem, repeaters, antenna systems, TTC subsystems, thermal control subsystems, structure subsystem, Reliability of satellite subsystems. IRIDIUM-System. The GlobalStar system, Teledesic system.

Cellular, Mobile and Personal communications: Introduction, Cellular concept and its initial implementation, Digital cellular mobile systems.

Text books:

1. Satellite communications
-- Dr. D.C Agarwal
khanna publishers
2. Mobile and personal communication systems and services
-- Rajpandya.
PHI publications

Reference Books:

1. Mobile Cellular Telecommunications
2nd edition
--WilliamC.Y.Lee

IT4.1.5 Elective-I EMBEDDED SYSTEMS Credits:4

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

Sessional Marks: 30
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.

Interrupts basics, ISR;Context saving, shared data problem. Atomic and critical section, Interrupt latency.

Survey of software architectures, Round Robin , Function queue scheduling architecture, Use of real time operating system.

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 real-time 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:

1. David A. Simon, An Embedded Software Primer, Pearson Education, Inc., 1999
2. Sriram V Iyer and Pankaj Gupta, Embedded Real Time Systems programming, TMH, 2004

Reference Books:

1. Frank Vahid/ Tony Givargis, Embedded Systems Design – A Unified Hardware/Software Introduction, John Wiley & Sons, Inc., 2002
2. Raj Kamal, Embedded Systems, Architecture, Programming and Design, TMH, 2003

IT4.1. Elective -1 VISUAL PROGRAMMING TECHNIQUES Credits:4

Instruction: 3+1 Periods /Week
Univ Exam: 3 Hours

Sessional Marks: 30
Univ Exam Marks: 70

Visual Basic Language: Variables, Constants, Arrays, Collections, Procedures, Arguments, Function return Values, Control Flow statements, Loop statements, Nested Control structures.

Working with Forms: Appearance of forms, Designing Menus, Building Dynamic forms at runtime, Drag and Drop Operations.

Basic ActiveX Controls: The Textbox Control, The List Box and Combo Box Controls, The scrollbar and Slider Controls, The File Controls.

Getting Started in Visual C++: Parts of Visual C++ program - application object – main window object , view object document object. Event oriented window programming , device context. Microsoft foundation classes an overview

Event Handling :Reading keystrokes, handling mouse , creating menus, tool bars, buttons, status bar prompts, dialog box, check box, radio buttons, list boxes, combo boxes, sliders, serialization , file handling , multiple documents.

File Handling: Understanding and working with objects, controls, file handling , debugging

Creating ActiveX controls: DLLs , OLE, Object technologies. Creating internet program's using visual C++ and visual basic. Creating Active X controls. Connecting to database using VC++ and visual basic.

Text Books:

Mastering Visual Basic 6 –Evangelos Petroustos –BPB Publications

Visual C++ 6 - Steven Holzner –BPB publications

IT4.1.5 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

1.FOUNDATION: Basics- Sets- Relations- Proof methods- Problem-solving strategies- Mathematical Induction.

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

3.RECURRENCE RELATIONS: Generating Functions of Sequences- Calculating Coefficients of Generating Functions- Recurrence Relations- Solving Recurrence Relations using Substitution and Generating Functions-Method of Characteristic Roots-Solutions of homogeneous and inhomogeneous recurrence relations.

PART II GRAPH THEORY

4.FUNDAMENTAL CONCEPTS: what is a Graph-Paths-Cycles-Trails-Vertex Degrees and Counting-Directed Graphs-Trees and Distance-Spanning Trees-Enumeration-Optimization and Trees.

5.MATCHINGS AND CONNECTIVITY : Matchings and Covers-Algorithms and applications of matching-Matchings in General graphs-Cuts and Connectivity-k-connected graphs-Network flow problems.

6.COLORING AND PLANAR GRAPHS: Vertex coloring and upper bounds-Structure of k-chromatic Graphs-Enumerative Aspects-Embeddings and Euler's formula-Characterization of Planar graphs-Parameters of Planarity-Edges and Cycles-Line Graphs and edge-coloring-Hamiltonian Cycles-Planarity-coloring and cycles.

TEXT BOOKS:

- 1.J.L. Mott, Abraham Kandel & Theodore P. Baker, "Discrete mathematics for Computer Scientists & Mathematics", Prentice-Hall of India Ltd. New Delhi. (Chapters 1,2,3)
- 2.Douglas B. West, "Introduction to Graph Theory", Pearson Education Asia, New Delhi. (Chapters 1,2,3,4,5,6,7)

REFERENCE BOOKS:

1. Michel Townsend, "Discrete Mathematics: Applied Combinatorics and graph theory", The Benjamin/Cummings Publishing Company", California.

2. Kenneth H Rosen. "Discrete Mathematics and Its Applications, Tata McGrahHill Publishing Company, New Delhi.
3. Robin J. Wilson, "Introduction to Graph Theory" Pearson Education Asia, New Delhi.

IT4.1.5 Elective- I RANDOM PROCESSES IN ENGINEERING Credits:4

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

Sessional Marks: 30
Univ-Exam-Marks:70

1.STOCHASTIC PROCESSES:- Notion of Stochastic Process, Classification of Stochastic Process according to Time and State Space; Discrete time Morkovchains, n th step transition probabilities, stationery distribution of Morkovchains, 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.

2. Stationary and Non Stationary processes:- AR Process; NA Process ; ARMA Process, ARIMA Process, Box and Jinkins Models, Correlogram analysis, Periodogram analysis, Spectrum of a Process.

3.QUEUEING THEORY:- Non Morkovchian queues, Phase type Technique, Embedded Markovchains Technique, GI/G/I Queues model, Polzak. Kintchins formula, queues with bulk arrivals queues with bulk services.

4. PRIORITY QUEUEING 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:

1. Probability, Statistics and Random Processes – By T.Veerarajan Tata McGraw – Hill
2. Probability and Statistics with Reliability , Queueing & Computer Science Applications – By Kishore S. Trivedi (Prentice Hall)

IT4.1.5 Elective- I ARTIFICIAL INTELLIGENCE Credits:4

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

Sessional Marks: 30
Univ-Exam-Marks:70

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, Discuses and Pragmatic Processing.

Expert Systems

Representing and Using Domain Knowledge, Expert Systems Shells, Explanation

Text Books:

1. Artificial Intelligence, Rich E & Knight K – Tata Mcgrahill (1991)
2. Introduction to Artificial Intelligence & Expert Systems, Paterson. PHI

IT4.1.6

NETWORK PROGRAMMING LAB

Credits: 2

Instruction: 3 Periods /Week

Sessional Marks: 50

Univ.-Exam : 3 Hours

Univ-Exam-Marks:50

1. Identifying well known ports on a Local/Remote System:

By trying to listen to the various well-known ports by opening client connections. If the exception does not occur then the remote port is active else the remote port is inactive.

2. Writing a chat application:

- i) One-One: By opening socket connection and displaying what is written by one party to the other.
- ii) Many-Many (Broad cast): Each client opens a socket connection to that chat server and writes to the socket. What ever is written by one party can be seen by all other parties.

3. Data retrieval from a Remote database:

At the remote database a server listens for client connections. The server accepts SQL Queries from the client executes it on the database and sends the responses to the client.

4. Mail Client:

- i) POP Client: Gives the server name, user name and password, retrieve the mails and allow manipulation of mailbox using POP commands.
- ii) SMTP Client: Gives the server name, send email to the recipient using SMTP commands.

5. Simulation of Telnet:

Provide a user interface to contact well known ports so that client server interaction can be seen by the user.

6. Simple file transfer between two systems (with out protocols):

By opening socket connection to our server on one system and sending a file from one system to another.

7. HTTP Server:

Develop a HTTP server to implement the following commands.

GET, POST HEAD, DELETE.

The server must handle multiple clients.

1) Downloading Image Files from HTTP server: Using Java URL connection class (Ref. Book: Java Network Programming-Orielly)

IT4.1.8 Object Oriented Software Engineering Laboratory Credits:2

Lab: 3 Periods/week
Univ.-Exam : 3 Hours

Sessional Marks: 50
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:

1. Software Engineering Process.
2. Unified Modeling Language (UML).
3. Data Structures and Specification.
4. Object-oriented design.
5. Debugging.

Syllabus Flexibility:

High. The students are free to choose 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.
3. Code documentation.
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 meetings 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.

IV/IV B.TECH (IT) II – SEMESTER

B.TECH (IT) 4th YEAR II-SEMESTER SCHEME OF INSTRUCTION AND EXAMINATION With effect from 2007-2008 admitted batch								
Sub.Ref.No.	Name of the Subject	Periods			Maximum marks			Credits
		Theory	Tutorial	Lab	Exam	Sessionals	Total	
IT 4.2.1	E COMMERCE	3	1	--	70	30	100	4
IT 4.2.2	CRYPTOGRAPHY & NETWORK SECURITY	3	1	--	70	30	100	4
IT 4.2.3	ELECTIVE –II	3	1	--	70	30	100	4
IT 4.2.4	GRAPHICS & MULTIMEDIA LAB	--	--	3	50	50	100	2
IT 4.2.5	PROJECT WORK	--	--	3	50	50	100	8
TOTAL CREDITS								22

Elective: I [1] WAP [2] Multimedia Systems [3] Internet and Application Technologies
 [4] VHDL [5] Data Ware housing & Data Mining

IT4.2.1**E-Commerce****Credits:4**

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

Sessional Marks: 30
Univ-Exam-Marks:70

Electronic commerce environment and opportunities: Back ground – The Electronic commerce Environment – Electronic Market Place Technologies.

Modes of electronic commerce: Overview – EDI – Migration to open EDI – E commerce with WWW/Internet – Commerce Net Advocacy – Web commerce going forward.

Approaches to safe electronic Commerce – Overview – Source – Transport Protocols – Secure Transactions – Secure Electronic Payment Protocol – Secure Electronic Transaction – Certificates for Authentication – Security on Web Servers and enterprise networks.

Electronic cash and electronic payment schemes – Internet Monetary Payment and Security requirements – payment and purchase order process – online electronic cash.

Master card/ Visa Secure electronic transaction: Introduction – Business requirements - Concepts - Payment Processing. Email and Secure Email Technologies for Electronic Commerce: Introduction – The means of Distribution – A model for Message Handling – How Does a Email Work.

Internet Resources for Commerce: Introduction – Technologies for Web Servers – Internet Applications for commerce – Internet Charges – Internet Access and Architecture – Searching the Internet.

Text Books:

Web Commerce Technology Hand Book
Daniel Minoli, Emma Minoli
McGraw Hill

Reference:

Frontiers of Electronic Commerce
Ravi Kalakotar, Andrew B.Whinston
Addison-Wesley

IT4.2.2 CRYPTOGRAPHY AND NETWORK SECURITY Credits:4

(Common with CSE 4.2.2)

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

Sessional Marks: 30
Univ-Exam-Marks:70

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:
Cryptography and Network security, Atul Kahate, Tata McGraw-Hill Pub company Ltd., New Delhi

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
- 2) Network Security Essentials Applications and Standards, William Stallings, Pearson Education, New Delhi
- 3) Network Security: The Complete Reference by Roberta Bragg, Mark Phodes-Ousley, Keith Strassberg
Tata McGraw-Hill

IT4.2.3

Elective-II WAP

Credits:4

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

Sessional Marks: 30
Univ-Exam-Marks:70

- 1.Introduction:** What is WAP, History, Architecture and future of WAP.
- 2.The user interface:** User interface basics, Text entry, using the cache, Types of WML cards, Graphics.
WAP development Tools and Software: Editors and Emulators, SDK's, Converting Images.
- 3.Working with WML:** WML basics: Writing WML code, some examples, Graphics, Templates.
Forms and User input: The Options Menu, Events, Variables, Input Tag.
Adding Functionality with WML Script: The rules of WML Script, Variables, Operators, Control Constructs, Reserved Words, Functions, The Standard Libraries, Arrays, pragmas, General coding Principles.
- 4.Database-Driven WAP:** ASP and WAP, ActiveX Data Objects (ADO), methods of converting existing HTML web site to WAP, M-Commerce and Security, Push Technology and Telematics.
- 5.Sample Applications:** Currency Converter, User Directory, Scheduling, E-Commerce

Text Books:

1. WAP 'A beginners Guide'----- DALE BULBROOK
- 2.WAP Development with WML and WML Script----- BEN FORTA and KEITH

IT4.2.3 Elective-II MULTIMEDIA SYSTEMS Credits:4

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

Sessional Marks: 30
Univ-Exam-Marks:70

INTRODUCTION:

Definition - CD-ROM and multimedia.

Multimedia applications: business - schools - homes - public places and virtual reality. Introduction to making of multimedia: hardware - software - creativity - and organization.

MULTIMEDIA TOOLS:

Macintosh and windows production platforms - 3-d modeling and animation - image-editing tools - sound editing tools - animation - video - and digital movie tools - linking multimedia objects - office suites - word processors - spread sheets - databases - presentation tools. Authoring tools - Card and Page-based authoring tools - Icon Based authoring tools - time based authoring tools - object oriented authoring tools - cross platform-authoring tools

MULTIMEDIA BUILDING BLOCKS:

Text: About fonts and faces - text in multimedia - computers and text - Font editing and design tools - Hypermedia and Hypertext.

Sound: Multimedia system sounds - MIDI versus digital audio - digital audio - making MIDI audio - audio file format - working with sounds in windows - working with sounds on the Macintosh - NIFF - Adding sounds to multimedia - Towards professional sounds - production tips.

Images: -Making still images - Colors - Image file format. Animation: Principals of animation - Making animation that works. Video: How video works - Broadcast video standards - Integrating computers and television - Shooting and Editing - Video tips - Recoding formats - Digital video

MULTIMEDIA AND THE INTERNET:

Internet fundamentals: Internetworking - Connections - Internet services - The World Wide Web - Tools for the World Wide Web: Web serves - Web browsers - Web page makers and Site builders - Plug-ins and Delivery vehicles - Beyond HTML

DESIGNING FOR THE WORLD WIDE WEB:

Working on web - Text for web - Images for web - Sound for web - Animation for web.

TEXTBOOKS: Multimedia: Making It Work - Tay Vaughan

REFERENCE BOOKS:

1. Multimedia System Design- K. Andleigh and K. Thakkrar
2. Multimedia: Computing, Communication & Application - Ralf stein Metz and Klara Nahrstedt
3. Advanced multimedia programming - Steve Rimmer
4. Multimedia Literacy - Fred T.Hofstetter MGHill

IT4.2.3 Elective-II INTERNET AND ITS APPLICATION TECHNOLOGIES Credits:4

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

Sessional Marks: 30
Univ-Exam-Marks: 70

Introducing ASP.NET: Problems with older versions of Active Server Pages, The Benefits of ASP.NET, Choosing the Appropriate Development Environment, Setting up the Development Environment.

Solutions, Projects, and the Visual Studio .NET IDE: Planning and Creating the Visual Studio .NET, Adding the Solution to Visual SourceSafe, The Visual Studio .NET integrated.

Exploring ASP.NET and Web Forms: Web Forms, Two ASP.NET Programming Models, Simple ASP.NET Page, Server Controls, View State, Post back, Responding to Events, Event Handler Procedure Arguments, Code-Behind page, life cycle of a web form and its controls, page layout.

The .NET Framework and Visual Basic .NET Object Programming: Definitions, The .NET Framework, Visual Basic .NET Object-Oriented Programming, Structures, Interfaces, Enumerations, Working with Collections, Referencing External Code Libraries.

Working with Web Server Controls: The Web server control hierarchy, Label Control, TextBox Control, Button and LinkButton Control, Hyperlink control, Image and ImageButton Control, CheckBox and RadioButton Controls, DropDownList and ListBOX Controls, Validation Controls.

Using Data Bound Web Controls: Data-Binding Basics, Single Value Data Binding, Repeating Binding Control Methods, Repeating Bindin Control Events, Mapping Fields to the Control, Data Bound Controls.

Data Access with ADO.NET: Connected versus Disconnected Data, ADO.NET Data Provides, ADO.NET data Namespaces, Primary Data Objects, Modified Table Data, Using the DataGrid to modify Data, Updating the Data store, Paging the Datagrid, Storing data with the DataGrid.

Working with XML Data: XML in the .NET Framework, The XML Document Object Model, XML Namespace, XML Objects, Working with XML Documents, Validating XML Documents.

Streams, File Access and Serialization: Stream Classes, File Classes, Directory Classes, Serialization.

Text Book: ASP.NET BIBLE – Glenn Johnson- Wiley Dreamtech publications

IT4.2.3**Elective-II V H D L****Credits:4**

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

Sessional Marks: 30
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:

1. Fundamentals of Digital Logic with Verilog Design, Stephen Brown and Zvonko Vranesic, Tata - McgrawHill, 2002
2. A Verilog HDL Primer, J. Bhasker, Second Edition, Star galaxy Pub., 1999

IT4.2.3 Elective-II DATA WARE HOUSING AND DATA MINING Credits:4

Instruction: 3 Periods & 1 Tut. /Week

Sessional Marks: 30

Univ.-Exam : 3 Hours

Univ-Exam-Marks:70

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

3Data Preprocessing

Why Pre-process the Data? Data Cleaning, Data Integration and Transformation

Data Reduction, Discretization and Concept Hierarchy Generation

4Data 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

5Concept 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

6Mining Association rule in large Databases, Association Rule Mining, Mining Single- Dimensional Boolean Association Rules from Transactional Databases, Mining Multilevel Association Rules from Transaction Databases, Mining Multidimensional Association Rules from Relational Databases and Data Warehouses, From Association Mining to Correlation Analysis, Constraint-Based Association Mining

7Classification 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

8Cluster 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

IT4.2.4 **GRAPHICS & MULTIMEDIA LABORATORY Credits:2**

Lab: 3 Periods/week

Sessional Marks: 50

Univ. Exam : 3 Hours

Univ-Exam-Marks:50

Graphics: using any graphic package.

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 3 D objects.
9. Coloring the 3 D objects.
10. Shading the 3 D objects
11. Rendering the objects
12. Creating smooth surfaces.
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.
3. Desktop Publishing: Create a 2-page desktop-published "newsletter," possibly using your "What is Multimedia?" text. Include graphics.
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:

- 2) Prabhat K. Andleigh & Kiran Thakrar, “ Mulitmedia Systems Design”, Prentice Hall of India, New Delhi.
- 3) Calleen Coorough, “Multimedia and the Web Creating digital Excitement”, Vikas Publishing House, New Delhi.
- 4) James E. Shuman, “ Multimedia in Action”, Vikas Publishing House, New Delhi.

IT4.2.5

PROJECT WORK

Credits:8

Project: 6 Periods /week

Sessional Marks: 50
Univ-Exam-Marks:50

GUIDELINES for preparing the report of the Project Work

FORMAT FOR PREPARATION OF PROJECT REPORT

FOR

B. TECH.(IT)

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 Font Style 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

1. Aripnammal, S. and Natarajan, S. (1994) ‘Transport Phenomena of Sm Sel – X Asx’, *Pramana – Journal of Physics* Vol.42, No.1, pp.421-425.
2. Barnard, R.W. and Kellogg, C. (1980) ‘Applications of Convolution Operators to Problems in Univalent Function Theory’, *Michigan Mach, J.*, Vol.27, pp.81–94.
3. Shin, K.G. and Mckay, N.D. (1984) ‘Open Loop Minimum Time Control of Mechanical Manipulations and its Applications’, *Proc.Amer.Contr.Conf.*, San Diego, CA, pp. 1231-1236.

- 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.

* * * * *

(A typical Specimen of Cover Page & Title Page)

TITLE OF PROJECT REPORT

<1.5 line spacing>

A PROJECT REPORT

Submitted by

<Italic>

NAME OF THE CANDIDATE(S)

in partial fulfillment for the award of the degree

of

<1.5 line spacing><Italic>

BACHELOR OF TECHNOLOGY

IN

INFORMATION TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND SYSTEMS ENGINEERING

ANDHRA UNIVERSITY AUTONOMOUS COLLEGE OF ENGINEERING

< Font Size 14>

ANDHRA UNIVERSITY : VISAKHAPATNAM - 530003

<1.5 line spacing>

MONTH & YEAR

SPECIMEN

**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

INFORMATION TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND SYSTEMS ENGINEERING

ANDHRA UNIVERSITY AUTONOMOUS COLLEGE OF ENGINEERING

ANDHRA UNIVERSITY:: VISAKHAPATNAM-530 003

MAY 2005

(A typical specimen of Bonafide Certificate)

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

<<Name>>
HEAD OF THE DEPARTMENT

<<Department>>

<<Full address of the Dept & College >>

<<Signature of the Supervisor>>
SIGNATURE

<<Name>>
SUPERVISOR

<<Academic Designation>>

<<Department>>

<<Full address of the Dept & College >>

(A typical specimen of table of contents)

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	1.2	2
	1.2.1 General	5
	1.2.2	12
	1.2.2.1 General	19
	1.2.2.2	25
	1.2.2.3	29
	1.2.3	30
	1.3	45
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