SRI KANYAKA PARAMESWARI
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ESTD. 1999
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N A A C
Accredited

DEPARTMENT OF COMPUTER APPLICATIONS

PROGRAM OUTCOME

Graduates of the program should be able to:

PO1: Understand basic concepts of computers and apply the concepts to solve real world problems on their own.

PO2: Acquire the required competencies to face the challenges and they will develop their communication and professional skills to compete in the industry.

PO3: Apply their inherent skills with absolute focus to function as a successful entrepreneur.

PO4: Develop practical skills to provide solutions to problems in industry, society and business.

PO5: Develop strong commitment towards social responsibility through ethical programming.

PO6: Recognize and engage in self-directed lifelong learning.

PROGRAM SPECIFIC OUTCOME

PSO1: Understand the necessary theoretical and practical knowledge of computers and the students will be able to investigate and solve real-world problems using computing techniques.

PSO2: Acquire an in-depth knowledge of information technology along with the basic concepts of mathematics and accounting.

PSO3: Learn advanced technologies and programming languages to compete in the ever changing industry.

PSO4: Acquire hands-on training on various areas of computer applications through internships.

PSO5: Enhance communication skills to become competent IT professionals.

PSO6: Apply computer science principles, methods and tools to solve problems related to environmental sustainability.

Subject Name: Fundamentals Of Digital Computers   **Year: I**
Subject Code: SAU1A   **Semester: I**

Unit 1: Fundamentals of computers – Characteristics of computers – Computer Language – Operating Systems – Generation of Computers.

Unit-2: Number systems - Conversion from one number system to another - complements – Binary codes - Binary logic - Logic gates - Truth tables.

Unit 3: Boolean algebra - Axioms - Truth table simplification of Boolean function - map method (upto 5 Variables) - Mc-Clausky tabulation method

Unit-4: Sequential logic – RS, JK, D and T Flip flops - Registers –Shift Registers - Counters – Ripple Counters – Synchronous Counter – Design of Counters

Unit-5: Adders – Subtractors – Decoders – Encoders – Multiplexer - Demultiplexer – Design of Circuits using decoders/Multiplexers – ROM – PLA – Designing circuits using ROM/PLA

1. **Recommended Texts:**

   i. M.M. Mano, Digital Logic and Computer Design, Pearson Education.
   ii. V.Rajaraman, 2002, Fundamentals of Computers, Third Edition, PHI, New Delhi.

2. **Reference Books:**

   i .T.C.Bartee,1991, Computer Architecture and logical Design, McGraw Hill.

COURSE OUTCOME

CO1: Describe basic concepts of computers and fundamentals of Digital Principles.
CO2: Explain basic ideas of computer, number system, Boolean algebra, and axioms.
CO3: Classify basic components and their functioning**.**
CO4: Evaluate Boolean algebraic expression**.**

Subject Name: Allied Mathematics-I   **Year: I**
Subject Code: SBAMM   **Semester: I**

Unit – 1: Algebra: Summation of series simple problems. Numerical Methods: Operators E, Δ, ∇ difference tables, Newton-Raphson method Newton's forward and backward interpolation formulae for equal intervals, Lagrange's interpolation formula.

Unit – 2: Matrices Symmetric, Skew-Symmetric, Orthogonal, Hermetian, Skew-Hermetian and Unitary matrices. Eigen values and Eigen-vectors, Cayley-Hamilton theorem (without proof) – verification – Computation of inverse matrix using Cayley – Hamilton theorem.

Unit – 3: Theory of Equations: Polynomial equations with real coefficients, irrational roots, complex roots, symmetric functions of roots, transformation of equation by increasing or decreasing roots by a constant, reciprocal equation. Newton's method to find a root approximately – simple problems.

Unit – 4: Trigonometry: Expansions of $\sin(n\theta)$ and $\cos(n\theta)$ in a series of powers of $\sin\theta$ and $\cos\theta$ – Expansions of $\sin^n\theta$,$\cos^n\theta$, $\tan^n\theta$ in a series of sines, cosines and tangents of multiples of "θ" – Expansions of $\sin\theta$, $\cos\theta$ and $\tan\theta$ in a series of powers of "θ" – Hyperbolic and inverse hyperbolic functions – Logarithms of complex numbers.

Unit –5: Differential Calculus: Successive differentiation, n^{th} derivatives, Leibnitz theorem (without proof) and applications, Jacobains, Curvature and radius of curvature in Cartesian co-ordinates, maxima and minima of functions of two variables, Lagrange's multipliers – Simple problems

Reference Books:
1. S. Narayanan and T.K.Manickavasagam Pillai – Ancillary Mathematics, S. Viswanathan Printers, 1986, Chennai.
2. P. Duraipandian and S. Udaya Baskaran, Allied Mathematics, Vol. I & II Muhil Publications Chennai.

COURSE OUTCOME

CO1: Summarize the concepts of summation of series, Operators, Newton-Raphson Method, and Newton's forward and backward formulae, Lagrange's Formula and solve their problems.
CO2: Explain the concepts of symmetric, Skew-Symmetric, Hermetian, Eigen Values and Vectors, Cayley – Hamilton theorem.
CO3: Solve the polynomial Equations and calculate, irrational and complex roots, transformation of equation, Reciprocal equation, Newton's Method.
CO4: Evaluate the expansions of *sinθ, cosθ* and *tanθ* in a series of powers of "θ" Hyperbolic and inverse hyperbolic function, Logarithms.
CO5: Define the concept of successive differentiation, Leibnitz theorem, Jacobians, maxima and minima of functions, Lagrange's multipliers

Subject Name: PC Software   **Year: I**
Subject Code: SAZ11   **Semester: I**

<u>MS-WORD</u>

1. Text Manipulations.
2. Usage of Numbering, Bullets, Footer and Headers.
3. Usage of Spell check, and Find & Replace.
4. Text Formatting.
5. Picture insertion and alignment.
6. Creation of documents, using templates.
7. Creation templates
8. Mail Merge Concepts
9. Copying Text & Pictures from Excel

<u>MS-EXCEL</u>

10. Cell Editing
11. Usage of Formulae and Built-in Functions
12. File Manipulations
13. Data Sorting (both number and alphabets)
14. Worksheet Preparation
15. Drawing Graphs
16. Usage of Auto Formatting

<u>MS-POWER POINT</u>

17. Inserting Clip arts and Pictures
18. Frame movements of the above
19. Insertion of new slides
20. Preparation of Organisation Charts
21. Presentation using Wizards
22. Usage of design templates

COURSE OUTCOME

CO1: Use the features of MS-Word, MS-Power Point and MS-Excel.
CO2: Manipulate text and apply numbering, bullets, tools and headers.
CO3: Create worksheet, prepare charts and organize data.
CO4: Insert and work with clipart and apply transition effects.

Subject Name: Basics of Retail Marketing   **Year: I**
Subject Code: CNE1B   **Semester: I**

Unit –1: Retailing – definition – Retail Marketing – Growth of organized retailing in India – importance of retailing

Unit - 2: Functions of retailing – characteristics of Retailing – Types of Retailing – store retailing – Non-store retailing

Unit – 3: Retail location factors – Branding in retailing – private labeling – Franchising concept

Unit – 4: Communication tools used in Retailing – Sales promotion, e-tailing – window display

Unit – 5: Supply chain management – definition – importance – Role of information Technology in retailing.

Reference Books:

1. Modern retail Management – J.N.Jain & P.P.Singh Regal Publications, New Delhi
2. Retail Management – Suja Nair, Himalaya Publishing house.

COURSE OUTCOME

CO1: Explain Growth of organized retailing in India, importance of retailing**.**
CO2: Construct various types of retailing, store and non-store retailing**.**
CO3: Define Retail location, branding, franchising**.**
CO4: Analyze Communication tools used in retailing, supply chain management**.**

Subject Name: Programming in C   Year: I
Subject Code: SAE1A   Semester: II

Unit 1: Fundamental Character set - Identifier and keywords - data types - constants – Variables, Declarations - Expressions - Statements - Arithmetic, Unary, Relational and logical, Assignment and Conditional Operators - Library functions.

Unit-2: Data input output functions - Simple C programs - Flow of control - if, if-else, while, do-while, for loop, Nested control structures - Switch, break and continue, go to statements - Comma operator.

Unit 3: Functions –Definition - proto-types - Passing arguments – Recursions- Storage Classes – Automatic, External, Static, Register Variables – Multi-file programs.

Unit-4: Arrays - Defining and Processing - Passing arrays to functions – Multi-dimension arrays, Arrays and String. Structures - User defined data types - Passing structures to functions - Self-referential structures – Unions - Bit wise operations.

Unit-5: Pointers-Declarations- Passing pointers to Functions - Operation in Pointers - Pointer and Arrays - Arrays of Pointers - Structures and Pointers – Files- Creating, Processing, Opening and Closing a data file.

Recommended Texts:
 1. E.Balaguruswamy, 1995,Programming in ANSI C, TMH Publishing Company Ltd.

Reference Books:
 1. H. Schildt, 2004, The Complete Reference, 4th Edition, TMH
 2. Gottfried,B.S, 1996, Programming with C, Second Edition, TMH Pub. Co. Ltd., New Delhi
 3. Kanetkar Y,1999, Let us C, BPB Publications., New Delhi.
 4. Kamthane, 2002, Programming with ANSI & Turbo C, First Edition,Pearson Education, New Delhi.

COURSE OUTCOME

CO1: Describe basic programming concepts like algorithms, flow charts and write C programs.
CO2: Develop conditional and iterative statements in programs.
CO3: Discuss various storage classes and function types.
CO4: Construct programs using pointers and allocate memory using dynamic memory
          Management functions.
CO5: Perform various file operations.

I   Summation of Series :
       1. Sin(x), 2. Cos(x),   3. Exp(x) (Comparison with built in
       functions)

II   String Manipulation :
       1. Counting the no. of vowels, consonants, words, white spaces in a line of text and array
           of lines
       2. Reverse a string & check for palindrome.
       3. Substring detection, count and removal
       4. Finding and replacing substrings

III   Recursion :
       1. $^n P_r$, $^n C_r$
       2. GCD of two numbers
       3. Fibonacci sequence
       4. Maximum & Minimum
       5. Towers of Hanoi.

IV   Matrix Manipulation :
       1. Addition & Subtraction
       2. Multiplication
       3. Transpose, and trace of a matrix
       4. Determinant of a Matrix
       5 .Inverse of Matrix

V   Sorting and Searching:
       1. Insertion Sort
       2. Bubble Sort
       3. Linear Search
       4. Binary Search

COURSE OUTCOME

CO1: Implement structure of C programming, declarations and use of variables.
CO2: Compile and trace the execution of programs.
CO3: Perform operations using derived data types, pointers and arrays.

Subject Name: Allied Mathematics - II   **Year: I**
Subject Code: SBAMN   **Semester: II**

Unit –1: Integral Calculus: Bernoulli's formula $\int_0^{\frac{\pi}{2}} sin nx\, dx$, , $\int_0^{\frac{\pi}{2}} Cos^n x\, dx$, $\int_0^{\frac{\pi}{2}} sin^m x Cos^n x\, dx$ Reduction formulae- (m,n being positive integers), Fourier Series for functions in(a,a+2ð), Half range sine and cosine series.

Unit –2: Differential Equations Ordinary Differential Equations**:** Second order non-homogenous differential equations with constant coefficients of the form ay''+by'+cy=X where X is of the form e^{ax}cosbx and e^{ax}sinbx. Partial Differential Equations: Formation, complete integrals and general integrals, four standard types and solving lagrange's linear equation P $_{P + Q}$ q = R verification – Computation of inverse matrix using Cayley – Hamiltonian theorem.

Unit – 3: Laplace Transforms: Laplace transformations of standard functions and simple properties, inverse laplace transforms, Application to solution of linear differential equations up to 2nd order – simple problems.

Unit – 4: Vector Differentiation: Introduction, Scalar point functions, Vector point functions, Vector differential operator N, Gradient, Divergence, Curl, Solenoidal, irrotational, identities.

Unit – 5: Vector Integration: Line, Surface and volume integrals, Gauss, Stoke's and Green's theorems (without proofs). Simple problems on these.

Reference Books:

1. S. Narayanan and T.K. Manickavasagam Pillai – Ancillary Mathematics, S. Viswanathan Printers, 1986, Chennai.
2. P. Duraipandian and S. Udaya Baskaran, Allied Mathematics, Vol. I & II Muhil Publications Chennai.

COURSE OUTCOME

CO1: Describe Bernoulli's Formula, Reduction Formula and deduce, Fourier series, Half range series.
CO2: Manipulate second order non-homogeneous differential equations, in P.D.E formation and four standard types, Lagrange's linear equation.
CO3: Explain the concepts of Laplace transformation, Inverse Laplace transforms and enumerate the application to solution of linear differential equations up to second order.
CO4: Construct scalar and Vector point functions, Gradient, Divergence, Curl, Solenoidal.
CO5: Generalize the concepts of Surface and Volume integrals, Gauss, Stoke's and Green's Theorems and Problems.

Subject Name: Concept of Self Help Group   **Year: I**
Subject Code: MNM2J   **Semester: II**

 Unit – 1: Meaning, Concept and functions of SHGs

 Unit – 2: Women empowerment through SHGs

 Unit – 3: Micro finance through SHGs

 Unit – 4: Social Development through SHGs

 Unit – 5: Role of Govt. and NGO's in fostering SHGs

COURSE OUTCOME

CO1: Explain Self Help Group concept in India.
CO2: Compare Micro financing and self help group**.**
CO3: Describe NGO Assistance to self help groups.
CO4: Interpret Linkage between banks and self help groups.
CO5: Classify Women empowerment through self help group**.**

Subject Name: Programming In C++ Using Data Structures   **Year: II**
Subject Code: SAZ3A   **Semester: III**

Unit - 1: Introduction **to** C++: Tokens, Keywords, Identifiers, Variables, Operators, Manipulators, Expressions and Control Structures in C++; Pointers - Functions in C++ - Main Function - Function Prototyping - Parameters Passing in Functions - Values Return by Functions - Inline Functions - Friend and Virtual Functions.

Unit - 2: Classes and Objects; Constructors and Destructors; and Operator Overloading and Type Conversions - Type of Constructors - Function overloading. Inheritance: Single Inheritance - Multilevel Inheritance - Multiple Inheritance - Hierarchical Inheritance - Hybrid Inheritance. Pointers, Virtual Functions and Polymorphism; Managing Console I/O operations.

Unit - 3: Working with Files: Classes for File Stream Operations - Opening and Closing a File - End-of-File Deduction - File Pointers - Updating a File - Error Handling during File Operations - Command-line Arguments. Data Structures: Definition of a Data structure - primitive and composite Data Types, Asymptotic notations, Arrays, Operations on Arrays, Order lists.

Unit - 4: Stacks - Applications of Stack - Infix to Postfix Conversion, Recursion, Maze Problems - Queues - Operations on Queues, Queue Applications, Circular Queue. Singly Linked List - Operations, Application - Representation of a Polynomial, Polynomial Addition; Doubly Linked List - Operations, Applications.

Unit - 5: Trees and Graphs: Binary Trees - Conversion of Forest to Binary Tree, Operations - Tree Traversals; Graph - Definition, Types of Graphs, Hashing Tables and Hashing Functions, Traversal - Shortest Path; Dijkstra's Algorithm.

Recommended Texts:

1. E. Balagurusamy,1995,Object Oriented Programming with C++, Tata McGraw-Hill Publishing Company Ltd.
2. E.Horowitz and S.Shani,1999,Fundamentals of Data Structures in C++ , Galgotia Pub.

Reference Books:

1. Robert Lafore, Object Oriented Programming in Microsoft C++, Galgotia publication.
2. H.Schildt, C++,1998,The Complete Reference-1998-TMH Edition, 1998.
3. R. Kruse C.L. Tondo and B. Leung, 1997, Data Structures and Program design in C, PHI.
4. Cangsam,Auguenstein,Tenenbaum,Data Structures using C & C++,PHI.
5. D.Samantha, 2005, Classic Data Structures, PHI,New Delhi.

COURSE OUTCOME

CO1: Construct of object oriented programming using C++ and implements the data structure concepts.
CO2: Define basics of OOP and object oriented approach to design software.
CO3: Design and implement programs using classes, objects and operator overloading.

Subject Name: Microprocessors and Its Applications   **Year: II**
Subject Code: SAZ3B   **Semester: III**

Unit-1: Introduction to microcomputers-microprocessor and assembly languages-microprocessor architecture and its operations-8085 MPU-8085 instruction set and classifications

Unit-2: Writing assembly level programs-programming techniques such as looping-counting and indexing addressing modes-data transfer instructions-arithmetic and logic operations-dynamic debugging

Unit-3: Counters and time delays-hexadecimal counter modulo 10 counter-pulse timings for flashing lights-debugging counter and time delay program-stack-subroutine-conditional call and return instructions

Unit-4: BCD to binary and binary to BCD conversions-BCD to HEX and HEX to BCD conversions-ASCII to BCD to ASCII conversions-BCD to seven segment LED code conversions-binary to ASCII and ASCII to binary conversions-multi byte addition-multi byte subtraction-BCD addition-BCD subtraction-multiplication and division

Unit-5: Interrupt-implementing interrupts-multiple interrupt 8085-trap-problems on implementing 8085 interrupt-DMA memory interfaces-RAM & ROM –I/O interface-direct I/O memory mapped I/O.

Recommended Texts:

1. R.S.Ganokar-1990-Microprocessor architecture-Programming and Application with 8085/8080A-Wiley Eastern Limited.
2. A.Mathur-1993-Introduction to Microprocessor-3rd Edition-Tata McGraw Hill.

COURSE OUTCOME

CO1: Illustrate architecture and functions of microprocessors and ability to utilize their instruction set to develop microprocessor applications.
CO2: Discuss fundamentals of assembly level programming of Microprocessors and Microcontrollers
CO3: Identify 16-bit microprocessor with memory and peripheral chips involving system design

Subject Name: Numerical & Statistical Methods   **Year: II**
Subject Code: SAZ3C   **Semester: III**

Unit-1: Introduction- Mathematical Preliminaries- Errors: Computations, Formula - Errors in a Series Approximation- Roots of Equations- Linear Equations: Bisection , False Position Methods- Newton-Raphson Method- Secant Method- Muller's Method- Lin-Bairstow's Method- Simultaneous Linear Equations: Matrix Inversion Method- Gauss Elimination, Gauss-Jordan, LU Decomposition Methods- Gauss-Seidel Method.

Unit-2: Numerical Differentiation- Errors in Numerical Differentiation- Cubic Spline Method- Numerical Integration- Trapezoidal Rule- Simpson's 1/3 and 3/8 Rules- Romberg Integration- Ordinary Differential Equations- Taylor's Series Method- Euler's Method- Runge-Kutta 2nd and 4th Order Methods-Predictor-Corrector Methods.

Unit-3: Sampling- Frequency Distribution- Cumulative Frequency Function- Grouped Sample- Measures of Central Tendency: Mean, Median and Mode- Geometric Mean- Harmonic Mean – Dispersion: Range, Mean Deviation, Variance and Standard Deviation- Moments- Computation of Moments

Unit-4: Probability- Characteristics: Addition, Multiplication and Conditional Probability Laws- Discrete Distributions: Random Variable- Density and Distribution Functions.- Binomial Distribution- Poisson Distribution- Hypergeometric Distribution- Mathematical Expectation.

Unit-5: Correlation and Regression Analysis: Linear Least Squares Fit- Nonlinear Fit- Fitting a Polynomial Function- Coefficient of Correlation- Properties- Multiple Correlation – Partial Correlation- Rank Correlation- Tests of Significance- Chi square Test- Goodness of Fit, Algorithm and Analysis of   Contingency   Tables- t-Test and F-Test.

Recommended Texts:

1. S.S.Sastry, 2005,Introductory Methods of Numerical Analysis, 4th Edition, Prentice- Hall of India Pvt. Ltd..
2. E.Balagurusamy, 2000, Computer Oriented Statistical and Numerical Methods - Macmillan India Ltd.

Reference Books:

1. V. Rajaraman, 2005, Computer Oriented Numerical Methods, 3rd Edition, Prentice- Hall of India Pvt. Ltd...
2. K. S. Trivedi, 2005,Probability and Statistics with Reliability, Queuing and Computer Science Applications, Prentice-Hall of India Pvt. Ltd.
3. E. Balagurusamy, 1999, Numerical Methods, Tata McGraw-Hill Publishing Co. Ltd.
4. P. Niyogi, 2003,Numerical Analysis and Algorithms, Tata McGraw-Hill Publishing Co. Ltd.

COURSE OUTCOME

CO1: Evaluate the roots of Equations, Bisection, Newton-Raphson Method, Secant Method, Muller's Method, Matrix Inversion Method, Gauss Elimination and Seidal Method.

CO2: Calculate the numerical Differentiation, Numerical Integration, Trapezoidal Rule, Simpson's Rules, Taylor's Series, RungeKutta Method

CO3: Apply the concepts of sampling, Measures of Central Tendency, Dispersion, Moments to solve problems.

CO4: Describe probability, Discrete Distributions, Random Variable, Binomial and Poisson distribution.

CO5: Evaluate correlation and Regression, Least Square Method, Test of Significance, t-test and F-test.

1. Implement PUSH, POP operations of stack using   Arrays.

2. Implement PUSH, POP operations of stack using   Pointers.

3. Implement add, delete operations of a queue using Arrays.

4. Implement add, delete operations of a queue using Pointers.

5. Conversion of infix to postfix using stack operations

6. Postfix Expression Evaluation.

7. Addition of two polynomials using Arrays and Pointers.

8. Creation, insertion, and deletion in doubly linked list.

9. Binary tree traversals (in-order, pre-order, and post-order) using linked list.

10. Depth First Search and Breadth first Search for Graphs using Recursion.

COURSE OUTCOME

CO1: Implement Stack and Queue operations in C++.

CO2: Develop programs for evaluating expressions using infix and postfix operations.

CO3: Apply the concepts of singly linked lists, doubly linked lists and in C++.

CO4: Execute programs for graph search using depth first and breadth first methods.

Subject Name: Financial Accounting   **Year: II**
Subject Code: SBZ3C   **Semester: III**

Unit-1: The Accounting structure: Basic accounting concepts and conversions - Accounting equation - Meaning of accounting - Groups interested in accounting information - trial balance, final accounts (emphasis to be given to important adjustments) - Rectification of errors - Suspense account

Unit-2: Depreciation accounting - Meaning of depreciation - Methods of providing depreciation - Fixed percentage on original cost - Fixed percentage on diminishing balance (including change in the method of depreciation) Single entry: Definition and salient features Statement of affairs method - Conversion method. Average due date - Account current and investment accounts

Unit-3: Branch Accounts: Debtors system - profit and Loss Accounts - Stock and debtors system - Distinction between wholesale profit and retail profit - Independent branch (foreign branch excluded) - Departmental Accounts: Basis for allocation of expenses - Inter departmental transfer at cost or selling price - Treatment of expenses which cannot be allocated.

Unit-4: Hire purchase and Installment purchase: Meaning and legal position - Accounting aspects - Default and re-possession - Hire purchase trading account - Installment system - Accounting aspect**.** Sale or Return: Meaning and legal position - Accounting procedure under different circumstances.

Unit-5: Partnership Accounts: Section 13 of Indian Partnership Act - Fixed and fluctuating capital - Final accounts of firms - Admission of a partner - Retirement of a partner - Death of a partner - dissolution of partnership - Insolvency of a partner - (Garner Vs Murray) - Insolvency of all partners Gradual realization of assets and piecemeal distribution.

Recommended Texts & Reference Books:

 1. Gupta R.L, Advanced Accountancy, S.Chand, Delhi.
 2. Agarwal A.N, Higher Science of Accountancy, Kitab Mahal,Allahabad.
 3. S.P. Jain and K.L. Narang, Financial Accounting
 4. M.C.Shukla and T.S.Grawel, Adavnced Accounts (Vol. I)
 5. Gillespie, Accounting system, Procedure & methods, Prentice Hall India Ltd, New Delhi.

COURSE OUTCOME

CO1: Enumerate journal and ledger.
CO2: Analyse Trail balance
CO3: Explain Final Accounts.
CO4: Analyse errors.
CO5: Assess Bank Reconciliation statement.

Subject: Programming in Java   **Year: II**
Sub Code: SAZ4A   **Semester: IV**

Unit-1: Introduction to Java-Features of Java-Basic Concepts of Object Oriented Programming-Java Tokens-Java Statements-Constants-Variables-Data Types- Type Casting-Operators-Expressions-Control Statements: Branching and Looping Statements.

Unit-2: Classes, Objects and Methods - Constructors - Methods Overloading-Inheritance-Overriding Methods-Finalizer and Abstract Methods-Visibility Control –Arrays, Strings and Vectors-StringBuffer Class-Wrapper Classes

Unit-3: Interfaces-Packages-Creating Packages-Accessing a Package-Multithreaded Programming-Creating Threads-Stopping and Blocking a Thread-Life Cycle of a Thread-Using Thread Methods-Thread Priority-Synchronization-Implementing the Runnable Interface

Unit-4: Managing Errors and Exceptions-Syntax of Exception Handling Code-Using Finally Statement-Throwing Our Own Exceptions-Applet Programming-Applet Life Cycle-Graphics Programming-Managing Input/Output Files: Concept of Streams-Stream Classes-Byte Stream Classes-Character Stream Classes – Using Streams-Using the File Class-Creation of Files-Random Access Files-Other Stream Classes.

Unit-5: Network basics –socket programming – proxy servers – TCP/IP – Net Address – URL – Datagrams -Java Utility Classes-Introducing the AWT: Working with Windows, Graphics and Text- AWT Classes- Working with Frames-Working with Graphics-Working with Color-Working with Fonts-Using AWT Controls, Layout Managers and Menus.

Recommended Texts:

1. E. Balagurusamy ,2004,Programming with JAVA-2nd Edition, Tata McGraw-Hill Publishing Co.Ltd, New Delhi.
2. Herbert Schildt,The Complete Reference Java^{TM} , 2- 5th Edition,Tata McGraw-Hill Publishing Co. Ltd,New Delhi.

Reference Books:

1. Y. Daniel Liang, 2003, An Introduction to JAVA Programming, Prentice-Hall of India Pvt. Ltd.
2. Cay S. Horstmann and Gary Cornell,2005,Core Java^{TM}2 Volume I,Fundamental 7th Edition,Pearson Education.

COURSE OUTCOME

CO1: Understand the basic concepts of java.
CO2: Create classes. Objects, interfaces and packages in Java.
CO3: Manage errors, exceptions, graphics and files.
CO4: Understand the concepts of applets, AWT classes and Internetworking.

APPLICATIONS:

1. Substring Removal from a String. Use String Buffer Class.

2. Determining the Perimeter and Area of a Triangle. Use Stream Class.

3. Determining the Order of Numbers Generated randomly using Random Class.

4. Usage of Calendar Class and Manipulation.

5. Implementation of Point Class for Image Manipulation.

6. String Manipulation Using Char Array.

7. Database Creation for Storing E-mail Addresses and Manipulation.

8. Usage of Vector Classes.

9. Interfaces and Packages

10. Implementing Thread based Applications and Exception Handling.

11. Application using Synchronization such as Thread based, Class based and Synchronized Statements.

12. Textfiles (copy, display, counting characters, words and lines)

13. Data file creating and processing for electricity billing.

14. Data file creating and processing for telephone billing

APPLETS:

15. Working with Frames and Various Controls.

16. Working with Dialog Box and Menus.

17. Working with Colors and Fonts.

18. Drawing various shapes using Graphical statements.

19. Working with panel and all types of Layout.

20. Design a simple calculator with minimal of 10 operations

21. Usage of buttons, labels, text components in suitable application

22. Usage of Radio buttons, check box ,choice list in suitable application

COURSE OUTCOME

CO1: Use of basic object oriented programming concepts in Java to integrate library packages.
CO2: Create an application with database and applets.
CO3: Apply decision and iteration control structures to implement algorithm

Subject Name: Operating Systems   **Year: II**
Subject Code: SAZ4B   **Semester: IV**

Unit 1: Introduction: Views –Goals –Types of system – OS Structure –Components – Services - System Structures – Layered Approach -Virtual Machines - System Design and Implementation. Process Management: Process - Process Scheduling – Cooperating Process –Threads - Interprocess Communication. CPU Scheduling: CPU Schedulers – Scheduling criteria – Scheduling Algorithms

Unit-2:– Process Synchronization: Critical-Section problem - Synchronization Hardware – Semaphores – Classic Problems of Synchronization – Critical Region – Monitors. Deadlock: Characterization – Methods for handling Deadlocks – Prevention, Avoidance, and Detection of Deadlock - Recovery from deadlock.

Unit 3: Memory Management: Address Binding – Dynamic Loading and Linking – Overlays – Logical and Physical Address Space - Contiguous Allocation – Internal & External Fragmentation. Non Contiguous Allocation: Paging and Segmentation schemes –Implementation – Hardware Protection – Sharing - Fragmentation.

Unit-4: VirtualMemory**::** Demand Paging – Page Replacement - Page Replacement Algorithms – Thrashing. – File System: Concepts – Access methods – Directory Structure –Protection Consistency Semantics – File System Structures – Allocation methods – Free Space Management.

Unit-5 : I/O Systems: Overview - I/O Hardware – Application I/O Interface – Kernel I/O subsystem – Transforming I/O Requests to Hardware Operations – Performance. Secondary Storage Structures: Protection – Goals- Domain Access matrix – The security problem – Authentication – Threats – Threat Monitoring – Encryption.

Recommended Texts:

1. Silberschatz A., Galvin P.B., Gange,. 2002 , Operating System Principles ,Sixth Edition, John Wiley & Sons.

Reference Books:

1. H.M. Deitel ,1990, An Introduction to Operating System,- Second Edition, Addison Wesley.

COURSE OUTCOME

CO1: Explain manage resources, understand synchronizing concurrent processes and handling deadlocks.
CO2: Describe process management and concepts of Threading, multitasking, IPC.
CO3: Differentiate the various scheduling algorithms and identified the reasons of Deadlock and their remedial measures.

Subject Name: Computer Graphics   **Year: II**
Subject Code: SAZ4C   **Semester: IV**

Unit-1: Brief Survey of Computer Graphics – Graphics Systems: Video Display Devices – Types – Raster-Scan Systems and Random-Scan Systems – Input Devices – Hard-Copy Devices – Graphics Software.

Unit-2: Line-Drawing (DDA and Bresenham's) Algorithms – Circle-Generating (Midpoint) Algorithm – Ellipse-Generating (Midpoint) Algorithms – Area-Filling (Boundary-Fill and Flood-Fill) Algorithms - Line Attributes - Color and Grayscale Levels – Character Attributes – Inquiry Functions .

Unit-3: Two-Dimensional Transformation and Viewing: Basic Transformations – Matrix Representations and Homogeneous Coordinates – Composite Transformations – Other Transformations Window-to – Viewport Coordinate Transformation – Clipping Algorithms: Cohen-Sutherland Line Clipping and Sutherland – Hodgeman Polygon Clipping – Basic Modeling Concepts – Interactive Input Methods: Logical Classification of Input Devices – interactive Picture – Construction Techniques.

Unit-4: Three-Dimensional Display Methods: Parallel and Perspective Projections – Depth Cueing - Visible Line and Surface Identification – Polygon Surfaces: Polygon Tables, Plane Equations and Polygon Meshes - Three-Dimensional Transformations: Basic, Other and Composite Transformations.

Unit-5: Viewing Pipeline and Coordinates – Transformation from World to Viewing Coordinates – Projection Transformations - Matrices - View Volumes - Hidden Surface and Hidden Line Elimination Methods: Back-Face Detection , Depth-Buffer and A-Buffer Methods – -Wireframe Methods.

Recommended Texts:

 1. D.Hearn and M.P. Baker, 2005, Computer Graphics, C Version, 2nd Edition, Pearson Education, New Delhi.

Reference Books:

 1. W.M.Newman and R.F.Sproull,1997,2nd Edition ,Principles of Interactive Computer Graphics, Tata McGraw-Hill Publishing Co. Ltd.
 2. D.P.Mukherjee,1999,Fundamentals of Computer Graphics and Multimedia, 1st Edition, Prentice-Hall of India Pvt. Ltd. – 1999.
 3. N. Krishnamurthy, 2002, Introduction to Computer Graphics, 1st Edition, Tata McGraw-Hill Publishing Co. Ltd.
 4. D.F.Rogers, 2001, Procedural Elements for Computer Graphics, 2nd Edition, Tata McGraw-Hill Publishing Co. Ltd.
 5. Xiang and R.A. Plastock, 2002, Computer Graphics, Schaum's Outline Series, Tata McGraw-Hill Publishing Co.

COURSE OUTCOME

CO1: Describe basic concepts and application of computer graphic and demonstrate their ability to use modern 3D computer graphic techniques.

CO2: Implement various graphics drawing algorithms, 2D-3D transformations and clipping techniques.

CO3: Design, develop and test of modeling, rendering, shading and animation.

Subject Name: Cost and Management Accounting   **Year: II**
Subject Code: SBZ4A   **Semester: IV**

Unit-1: Cost Accounting: Definition, Meaning and objectives - Distinction between Cost and Financial Accounting. Elements of cost and preparation of cost sheets and tender. Management Accounting – Definition and objectives – Distinction between management and financial accounting.

Unit-2: Stores Records - Purchase Order - Goods Received. Note - Bin Card - Stores Ledger - Purchase, Receipt and Inspection - Inventory Control - ABC Analysis - Economic Ordering Quantity - Maximum, Minimum and Reordering levels - Methods of Pricing Issued.
Labour: Importance of Labour Cost Control - Various Methods of Wage Payment - Calculation of wages - Methods of Incentive for Schemes

Unit-3: Overheads: Factory, Administration, Selling and Distribution of overheads - Classification - Allocation and Apportionment Redistribution (Secondary Distribution) - Absorption of Over heads including 'Machine Hour Rate

Unit-4: Funds Flow and Cash Flow Analysis**:** Schedule of changes in working capital - Preparation of 'funds flow statement'-Preparation of 'Cash Flow Statement' - Importance of funds flow and cash flow Analysis - Difference between funds flow and cash flow.

Ratio Analysis: Utility and limitations of Accounting Ratios - calculation of Accounting Ratios - Ratio Analysis for Liquidity, Solvency, Profitability and Leverage.

Unit-5: Marginal Costing: The Concept - Break Even Analysis - Break - Even Chart - Importance and assumptions - Application of Profit Volumes Ratio - Different types of problems (with special emphasis on decision making problems). Budget and Budgetary Control: Procedure and Utility - Preparation of different types of Budget including Flexible Budget

Recommended Texts & Reference Books:

1. Wheldon A.J., Cost Accounting and Costing Methods.
2. Iyengar S.P., Cost Accounting: Principles and Practice.
3. Bhar B.K., Cost Accounting: Methods and problems.
4. Bigg W.W., Cost Accounts.
5. Prasad N.K, Cost Accounting: Principles and Problems.
6. Jain S.P. and Narang K.L., Advanced Cost Accounting.
7. Agarwal M., Theory and Practices of Cost Accounting
8. Robert Anthony: Management Accounting: Text and cases.
9. Maheswari S.N., Principles of Management Accounting.

COURSE OUTCOME

CO1: Prepare cost sheet, tender and quotation
CO2: Discuss economic order quantity, overheads and labour.
CO3: Describe ratio analysis
CO4: Prepare funds flow and Cash flow.
CO5: Explain marginal costing.

Subject Name: Environmental Studies   **Year: II**
Subject Code: ENV4A   **Semester: IV**

Unit -1: Introduction to Environmental Studies

- Multidisciplinary nature of environmental studies
- Scope and importance, concept of sustainability and sustainable development.

Unit – 2: Ecosystem

What is an Ecosystem? Structure and Function of Ecosystem; Energy flow in an Ecosystem; Food chains, Food webs and Ecological Succession,

a) Case Studies of the following ecosystem:
b) Forest Ecosystem
c) Grassland Ecosystem
d) Desert Ecosystem
e) Aquatic Ecosystem (ponds, stream, lakes, rivers, ocean, estuaries)

Unit – 3: Natural Resources: Renewable and Non- Renewable Resources

- Land resources and Land use change: Land degradation, soil erosion and desertification.
- Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations.
- Water: Use and over – exploitation of surface and ground water, floods, droughts, conflicts over water (international and interstate)
- Energy resources: Renewable and nonrenewable energy sources, use of alternate energy sources, growing energy needs, case studies.

Unit – 4: Biodiversity and Conservation

- Levels of biological diversity: Genetics, species and ecosystem diversity, biogeographic zones of india: biodiversity patterns and global biodiversity hotspots.
- India as a mega biodiversity nation, endangered and endemics species of India.
- Threats to biodiversity: Habitat loss, poaching of wild life, man- wild life conflicts, biological invasions; conservations of biodiversity: In-situ and Ex-situ conservation of biodiversity
- Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and informational value.

Unit – 5: Environmental Pollution

- Environmental Pollution: Types, causes, effects and controls: Air, water, soil and noise pollution.
- Nuclear Hazards and Human health risks.
- Solid waste management: Control measures of urban and industrial waste
- Pollution case studies.

Unit – 6: Environmental Policies and Practices

- Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture.
- Environment Laws: Environment protection act, air (prevention & control of pollution) act; water (prevention and control of pollution) act; wildlife protection act; forest conservation act; International agreements; Montreal and Kyoto protocols and convention on biological diversity (CBD).
- Natural reserves, tribal populations and rights, and human wildlife conflicts in Indian context.

Unit – 7: Human Communities and the Environment

- Human population growth, impacts on environment, human health and welfare.
- Resettlement and rehabilitation of projects affected persons; case studies.
- Disaster management: Floods, earthquake, cyclone and landslides.
- Environmental movements: Chipko, Silent Valley, Bishnois of Rajasthan.
- Environmental Ethics: Role of Indian and other religions and cultures in environmental conservation.
- Environmental communication and public awareness, case studies (e.g. CNG Vehicles in Delhi)

Unit – 8: Field Work

- Visist to an area to document environmental assets: river/forest/flora/fauna etc.
- Visit to a local polluted site – Urban/Rural/Industrial/Agricultural.
- Study of common plants, insects, birds and basic principles of identification.
- Study of simple ecosystem- pond, river, Delhi Ridge etc.

Suggested Readings:

1. Carson R 2002 Silent Spring Houghton Mifflin Harcourt
2. Gadgil M. & Guha R.1993.This Fissured land: An Ecological History of India.Univ.of California Press.
3. Glesson B and Low N (eds.) 1999. Global Ethics and Environment,London Routledge.
4. Gleick P.H 1993.Water Crisis.Pacific Institute for Studies in Dev.,Environment and Security.StockHolm Env.Institute, Oxford Univ.Press.

COURSE OUTCOME

CO1: Discuss Scope and importance of EVS

CO2: Create Public Awareness on environmental issues

CO3: Explain Structure and functions of ecosystem

CO4: Enumerate Renewable and non-renewable natural resources

CO5: Describe Biodiversity, environmental pollution, environmental policies and practices**.**

CO6: Explain Link between human communities and the environment

Subject Name: Database Management System   **Year: III**
Subject Code: SAZ5A   **Semester: V**

Unit-1: Advantages and Components of a Database Management Systems – Feasibility Study – Class Diagrams – Data Types – Events – Normal Forms – Integrity – Converting Class Diagrams to Normalized Tables – Data Dictionary.

Unit-2: Query Basics – Computation Using Queries – Subtotals and GROUP BY Command – Queries with Multiple Tables – Subqueries – Joins – DDL & DML – Testing Queries

Unit-3: Effective Design of Forms and Reports – Form Layout – Creating Forms – Graphical Objects – Reports – Procedural Languages – Data on Forms – Programs to Retrieve and Save Data – Error Handling.

Unit-4: Power of Application Structure – User Interface Features – Transaction – Forms Events – Custom Reports – Distributing Application – Table Operations – Data Storage Methods – Storing Data Columns – Data Clustering and Partitioning.

Unit-5: Database Administration – Development Stages – Application Types – Backup and Recovery – Security and Privacy – Distributed Databases – Client/Server Databases – Web as a Client/Server System – Objects – Object Oriented Databases – Integrated Applications.

Recommended Texts:

1. G. V. Post – Database Management Systems Designing and Building Business

   Application – McGraw Hill International edition – 1999.

Reference Books:

1. Raghu Ramakrishnan – Database Management Systems – WCB/McGraw Hill – 1998.
2. C.J. Date – An Introduction to Database

COURSE OUTCOME

CO1: Design an application's using conceptual modeling tools like ER Diagrams, Schemas,
       Database languages and SQL commands.
CO2: Differentiate Data base management system and file processing system.
CO3: Apply normalization techniques for efficient retrieval of data.

Subject Name: Software Engineering   **Year: III**
Subject Code: SAZ5B   **Semester: V**

Unit-1: Introduction to Software Engineering Some definition – Some size factors – Quality and productivity factors – Managerial issue. Planning a Software Project: Defining the problem – Developing a solution strategy – planning the development process – planning an organization structure – other planning activities

Unit-2: Software Cost Estimation: Software – Cost factors – Software cost estimation techniques – specification techniques – level estimation – estimating software maintenance costs.

Unit-3: Software requirements definition: The software requirements specification – formal languages and processors for requirements specification.

Unit-4: Software Design: Fundamental Design concepts – Modules and modularizing Criteria – Design Notations – Design Techniques – Detailed Design Consideration – Real time and distributed system design – Test plan – Mile stones walk through and inspection – Design guide lines

Unit-5: Verification and validation techniques: Quality assurance – Static analysis – symbolic exception – Unit testing and Debugging – System testing – Formal verification.Software maintenance: Enhancing maintainability during development – Managua aspects of software maintenance – Configuration management – source code metrics – other maintenance tools and techniques.

Recommended Texts:

1. Richard E.Fairly - Software Engineering Concepts - Tata McGraw-Hill book Company.

Reference Books:

1. R.S.Pressman, 1997, Software Engineering – 1997 - Fourth Ed., McGraw Hill.
2. Rajib Mall ,2004,Fundamentals of Software Engineering,2nd Edition, PHI.

COURSE OUTCOME

CO1: Describe phases of software development life cycle by analyzing the software
         requirements, designing, coding and testing using different strategies.
CO2: Apply the concepts of software quality assurance and enhance team work ability in project
         scheduling.
CO3: Develop skill for cost estimation of software development and understand the software
         risks.

Subject Name: Visual Programming   **Year: III**
Subject Code: SEZ5A   **Semester: V**

Unit 1: Customizing a Form - Writing Simple Programs - Toolbox - Creating Controls - Name Property - Command Button - Access Keys - Image Controls - Text Boxes - Labels - Message Boxes - Grid - Editing Tools - Variables - Data Types - String - Numbers.

Unit-2: Displaying Information - Determinate Loops - Indeterminate Loops - Conditionals - Built-in Functions - Functions and Procedures.

Unit 3: Lists - Arrays - Sorting and Searching - Records - Control Arrays - Combo Boxes - Grid Control - Projects with Multiple forms - DoEvents and Sub Main - Error Trapping.

Unit-4: VB Objects - Dialog Boxes - Common Controls - Menus - MDI Forms - Testing, Debugging and Optimization - Working with Graphics.

Unit-5: Monitoring Mouse activity - File Handling - File System Controls - File System Objects - COM/OLE - automation - DLL Servers - OLE Drag and Drop.

Recommended Texts:
1. Gary Cornell - Visual Basic 6 from the Ground up - Tata McGraw Hill - 1999.
2. Noel Jerke - Visual Basic 6 (The Complete Reference) - Tata McGraw Hill – 1999

COURSE OUTCOME

CO1: Design front-end using Visual basic controls and accessing data from the back-end SQL.
CO2: Describe fundamentals of visual programming and Graphical User Interface.
CO3: Discuss various control structures, functions and procedures of visual programming and
write simple programs.

Creation of a Database and performing the operations given below using a Menu Driven Program.

   a) Insertion b)Deletion c) Modification d) Generating a Simple report for the following:
   1. Payroll
   2. Mark sheet Processing
   3. Saving Bank account for banking
   4. Inventory System
   5. Invoice system
   6. Library information system
   7. Student information system
   8. Income tax processing system
   9. Electricity bill preparation system
   10. Telephone directory maintenance

COURSE OUTCOME

CO1: Implement Common SQL Statement including DDL, DML, and DCL Statements to
         perform different operations.

CO2: Apply embedded and nested queries and views of table for different users.

Subject Name: Value Education   **Year: III**
Subject Code: VAE5Q   **Semester: V**

UNIT – 1: Value education – its purpose and significance in the present world- Value system – the role of culture and civilization-Holistic Living-Balancing the outer and inner- Body, Mind and intellectual level-Duties and responsibilities.

UNIT – 2: Salient values for life- Truth, commitment, honesty and integrity, forgiveness and love, empathy and ability to sacrifice, care, unity and inclusiveness, Self-esteem and Self-confidence, punctuality - Time, Task and Resource management- Problem solving and Decision-making skills – Inter personal and Intra personal relationship – Team work – Positive and Creative thinking.

UNIT – 3: Human Rights – Universal Declaration of Human rights – Human rights violation - National Integration- Peace and non – violence – Dr. A. P.J kalam' s ten points for enlightened citizenship – Social values and Welfare of the citizen – The role of media in value building.

UNIT – 4: Environment and Ecological balance – interdependence of wellbeing – living and non – living. The binding of man and nature – Environment conservation and enrichment.

UNIT –5: Social Evils – Corruption, Cybercrime, Terrorism – Alcoholism, Drug addiction, Dowry – Domestic violence – Untouchability – Female infanticide – atrocities against Women – How to tackle them.

Books for Reference:

1. MG. Chitakra: Education and Human Values, A.P.H. Publishing Corporation, New Delhi, 2003.
2. Chakravarthy, S.K. : Values and ethics for organization: Theory and Practice,Oxford University Press, New Delhi, 1999.
3. Satchidananda, M.K. : Ethics, Education, Indian Unity and Culture, Ajantha Publications, Delhi, 1991.
4. Das, M.S. & Gupta, V.K.: Social Values among young adults: A chaning Scenario, M.D. Publicatoins, New Delhi, 1995.
5. Bandiste, D.D.: Humanist Values: A source book, B.R. Publishing Corporation, Delhi, 1999.
6. Ruhela, S.P.: Human Values and education, Sterling publications, new delhi, 1986.
7. Kaul, G.N.: Values and education in independent indian Associated publishers, Mumbai, 1975.
8. NCERT, Education in values, New Delhi, 1992.
9. Swami Budhananda (1983) How to build character A primer: Ramakrishna mission, New delhi.
10. A Cultural heritage of india (4 vols), Bharatiyavidyabhavan, Bombay. (Selected chapters only)
11. For life, for the future : Reserves and Remains – UNESCO Publication.
12. Values, A Vedanta kesari presentation, Sri Ramakrishna math, Chennai, 1996.
13. Swami Vivekananda, Youth and modern india, Ramakrishna mission, Chennai.
14. Swami Vivekananda, call to the youth for nation building, advaitaAshrama, Calcutta.
15. Awakening Indians to india, Chinmayananda Mission, 2003.

COURSE OUTCOME

CO1: Discuss Self-esteem, ego, anger manifestation, Indian ethos in ethics and individuals personality in the eyes of others
CO2: Describe Leadership, ethical business decisions, basic principles of professional ethics and mass media ethics.
CO3: Explain Effects of advertising, value of faith, social awareness and commitment and the steps for the protection of environment
CO4: Analyse Impact of globalization and consumer awareness, signs for an everlasting peace, evolution of human rights and the international law in operation
CO5: Discuss Intellectual activities and responsibility of citizen

Subject Name: Resource Management Techniques　　　　　　　**Year: III**
Subject Code: SAZ5C　　　　　　　　　　　　　　　　　　　　**Semester: V**

Unit-1: Basics of Operations Research (OR): Characteristics of O.R - Necessity of O.R in Industry -OR and Decision making - Role of computers in O.R. Linear programming: Formulations and Graphical solution (of 2 variables) canonical & standard terms of Linear programming problem. Algebraic solution: Simplex method.

Unit-2: Algebraic solution: Charnes method of penalties - two phase simplex method - concept of Duality - properties of duality - Dual simplex method.

Unit-3: Transportation model: Definition - formulation and solution of transportation models - the row - minima, column - minima, matrix minima and vogel's approximation methods. Assignment model: Definition of Assignment model - comparison with transportation model - formulation and solution of Assignment model - variations of Assignment problem.

Unit-4: Sequencing problem: Processing each of n jobs through m machines - processing n jobs through 2 machines - processing n jobs through 3 machines - processing 2 jobs through m machines - processing n jobs through m machines - travelling salesman problem. Game Theory: Characteristics of games - Maximin, Minimax criteria of optimality - Dominance property - algebraic and graphical method of solution of solving 2 x 2 games.

Unit-5: Pert - CPM: Networks - Fulkerson's Rule - measure of activity - PERT computation - CPM computation - resource scheduling. Simulation: Various methods of obtaining random numbers for use in computer simulation - Additive, multiplicative and mixed types of congruence random number generators - Monte Carlo method of simulation - its advantages and disadvantages.

Recommended Texts:

1. Hamdy A. Taha: ,1996,Operation Research - An Introduction, 5th edition, Prentice Hall of India, Pvt. Ltd., New Delhi .
2. Ackoff R.L. and Sasieni M. W,1968, Fundamentals of Operations Research, John Wiley and sons, New York.
3. Charnes A. Cooper W. and Hendersen A.,1953, Introduction to Linear Programming, Wiley and Sons, New York.
4. Srinath L.S,1973, PERT and CPM principles and applications, Affiliated East West Press Pvt. Ltd., New York.

COURSE OUTCOME

CO1: Describe O.R and Decision making, Linear Programming, Graphical and Simplex Method.
CO2: Evaluate Algebraic Solution, two phase simplex method, duality.
CO3: Calculate transportation model, row and column minima Method, Vogel's Method, Assignment Problems.
CO4: Calculate Sequencing problem, processing n jobs through m machines, Travelling Salesman Problem, Game theory, Dominance, Graphical Method.
CO5: Describe PERT- CPM Networks, Fulkerson's Rule, Simulation, Monte Carlo Method.

Subject Name: Web Technology   **Year: III**
Subject Code: SAZ6A   **Semester: VI**

Unit 1: Introduction to VBScript - Adding VBScript Code to an HTML Page - VB Script Basics - VBScript Data Types - VBScript Variables - VBScript Constants - VBScript Operators – mathematical- comparison-logical - Using Conditional Statements - Looping Through Code - VBScript Procedures – type casting variables - math functions –date functions – string functions – other functions - VBScript Coding Conventions - Dictionary Object in VBScript - Err Object

Unit-2: Introduction to Javascript – Advantages of Javascript – Javascript syntax - Data type – Variable - Array – Operator & Expression – Looping – control structures - Constructor Function – user defined function Dialog Box .

Unit 3: Javascript document object model – Introduction – Object in HTML – Event Handling – Window object – Document object – Browser object – Form object – Navigator object – Screen object – Build in object – User defined object – Cookies.

Unit-4: ASP.NET Language Structure – Page Structure – Page event, Properties & Compiler Directives . HTML server controls – Anchor, Tables, Forms, Files . Basic Web server Controls – Label, Text box, Button, Image Links, Check & radio Button, Hyperlink, Data List Web Server Controls – Check box list. Radio button list, Drop down list, List box, Data grid, Repeater.

Unit-5: Request and Response Objects, Cookies, Working with Data – OLEDB connection class, command class, transaction class, data adaptor class, data set class. Advanced issues – email, Application issues, working with IIS and page Directives, error handling. Security – Authentication, IP Address, Secure by SSL & Client Certificates.

Recommended Texts:

 1. I.Bayross, 2000, Web Enable Commercial Application Development Using HTML, DHTML, Javascript, Perl CGI, BPB Publications.
 2. A.Russell Jones, Mastering Active Server Pages 3, BPB Publications.

Reference Books:

 1. Hathleen Kalata, Internet Programming with VBScript and JavaScript, Thomson Learning
 2. Mike McGrath, XML Harness the Power of XML in easy steps, Dreamtech Publications
 3. T.A. Powell, 2002,Complete Reference HTML , TMH.
 4. J.Jaworski, 1999, Mastering Javascript, BPB Publications.
 5. Powell, Thomas; Schneider, Fritz, JavaScript: The Complete Reference, 2nd edition 2004, TMH.

COURSE OUTCOME

CO1: Discuss HTML code, VB Script, Java Script and Asp. Net to create web pages with aesthetic sense of designing.
CO2: Create and communicate between client and server, to create good and effective dynamic websites.
CO3: Analyze and apply the role of languages like HTML.

VB SCRIPT & JAVASCRIPT

1. Write a program outputs the squares, roots, cubes and complements of integers between 1 and 100.

2. Create a calculator.

3. Write a script to Sort numbers and strings

4. Create a program to generate a hit counter

5. Create a program to verify whether email address provided by user is valid or invalid.

6. Write a program to scroll the text on status bar.

7. The form consists of two multiple choice list and one single choice list
   - a. the first multiple choice list display the major dishes available.
   - b. the second Multiple choice list display the stocks available.
   - c. The single choice list display the miscellaneous
     (Milkshakes, soft drinks, softy available etc.)

8. Write a script to create a digital clock.

9. Create a web page using two image file which switch black and white one another as the mouse pointer moves over the image. Use the On Mouse over and OnMouseEvent, OnDblClick handler

10. Build a WWW page with an image and 3 buttons., Pick three favorite graphics, Label the buttons and make each one swap in the graphic you have chosen

11. Create a frameset that has two frames, side by side. Make the left-hand frame contain a form with 3 radio buttons.

    The buttons should be for three search engines:
    - Yahoo (http://www.yahoo.com)
    - Altavista (http://www.altavista.com)
    - Infoseek (http://www.infoseek.com)

When the user clicks on of the option buttons, the frame on the right hand side should be loaded with the right search engine.

12. Write a program to implement Employee database with all validation.

ASP

1. Create a login form, to expire, if the user does not type the password within 100 seconds.

2. Create an employee database and manipulate the records using command object in ASP

3. Develop an application to illustrate the usage of Request and Response Objects in ASP.

4. Write an ASP program using Request Object to give the exact list of headers sent by the browser to the Web server.

5. Create an Active Server Page to display the records one by one from a student database. The student database should contain roll no, name, marks & total.

7. Design an ASP application that describes books in the Online Bookshop.(Use AD Rotator Component, Content Rotator Component, Content Linking Component)

8. Create a document and add a link to it. When the user moves the mouse over the link it should load the linked document on its own (User is not required to click on the link).

9. Create a document, which opens a new window without a toolbar, address bar, or a status bar that unloads itself after one minute.

10. Create a document that accepts the user's name in a text field form and displays the same the next time when the user visits the site informing him that he has accessed the site for the second time, and so on.

COURSE OUTCOME

CO1: Create a static web site using HTML and add dynamic functionality to it by using JavaScript.

CO2: Develop Graphical User Interface applications and web based applications.

Subject Name: Data Communications And Networking   **Year: III**
Subject Code: SAZ6B   **Semester: VI**

Unit-1: Introduction to Data Communication, Network, Protocols & standards and standards organizations - Line Configuration - Topology - Transmission mode - Classification of Network - OSI Model - Layers of OSI Model.

Unit-2: Parallel and Serial Transmission - DTE/DCE/such as EIA-449, EIA-530, EIA-202 and x.21 interface - Interface standards - Modems - Guided Media - Unguided Media - Performance - Types of Error - Error Detection - Error Corrections.

Unit-3: Multiplexing - Types of Multiplexing - Multiplexing Application - Telephone system - Project 802 - Ethernet - Token Bus - Token Ring - FDDI - IEEE 802.6 - SMDS - Circuit Switching - Packet Switching - Message switching - Connection Oriented and Connectionless services.

Unit-4: History of Analog and Digital Network - Access to ISDN - ISDN Layers - Broadband ISDN - X.25 Layers - Packet Layer Protocol - ATM - ATM Topology - ATM Protocol.
Unit-5: Repeaters - Bridges - Routers - Gateway - Routing algorithms - TCP/IP Network, Transport and Application Layers of TCP/IP - World Wide Web.

Recommended Texts:
1. Behrouz and Forouzan,2001,Introduction to Data Communication and Networking, 2nd Edition,TMH.

Reference Books:

1. Jean Walrand 1998,Communication Networks (A first Course), Second Edition, WCB/McGraw Hill.
2. Behrouz and Forouzan, 2006, Data Communication and Networking,3nd Edition, TMH.

COURSE OUTCOME

CO1: Explain importance, concept and techniques in data communication with standards and protocols, different layers in networking and communication.
CO2: Illustrate layered approach to networking and understand various application layer protocols.
CO3: Explain basic principles of data communication, networks, protocol, standard topology and signals.

Subject Name: Software Testing   **Year: III**
Subject Code: SAZ6C   **Semester: VI**

Unit-1: Introduction: Purpose – Productivity and Quality in Software – Testing Vs Debugging – Model for Testing – Bugs – Types of Bugs – Testing and Design Style.

Unit-2: Flow/Graphs and Path Testing – Achievable paths – Path instrumentation – Application – Transaction Flow Testing Techniques

Unit-3: Data Flow Testing Strategies - Domain Testing: Domains and Paths – Domains and Interface Testing.

Unit-4: Linguistic –Metrics – Structural Metric – Path Products and Path Expressions. Syntax Testing – Formats – Test Cases.

Unit-5: Logic Based Testing – Decision Tables – Transition Testing – States, State Graph, State Testing.

Recommended Texts:

1. B. Beizer , 2003, Software Testing Techniques, II Edn., DreamTech India, New Delhi.
2. K.V. K. K. Prasad, 2005, Software Testing Tools, DreamTech. India, New Delhi.

Reference Books:

1. Burnstein, 2003, Practical Software Testing, Springer International Edn.

2. E. Kit, 1995, Software Testing in the Real World: Improving the Process, Pearson Education, Delhi.
3. R.Rajani, and P.P.Oak, 2004, Software Testing, Tata Mcgraw Hill, New Delhi.

COURSE OUTCOME

CO1: Discuss various test processes, types of errors and fault models, methods of test generation from requirements; assess tests using various flow techniques.
CO2: Use of software testing methods and modern software testing tools for their testing projects.
CO3: Describe how to planning a test project, design test cases and data, conduct testing operations, manage software problems and defects, generated testing report.

Subject Name: Object Oriented Analysis & Design　　　　　　　**Year: III**
Subject Code: SEZ6C　　　　　　　　　　　　　　　　　　**Semester: VI**

Unit-1: System Development - Object Basics - Development Life Cycle - Methodologies - Patterns - Frameworks - Unified Approach - UML.

Unit-2: Use-Case Models - Object Analysis - Object relations - Attributes - Methods - Class and Object responsibilities - Case Studies.

Unit-3: Design Processes - Design Axioms - Class Design - Object Storage - Object Interoperability - Case Studies.

Unit-4: User Interface Design - View layer Classes - Micro-Level Processes - View Layer Interface - Case Studies.

Unit-5: Quality Assurance Tests - Testing Strategies - Object orientation on testing - Test Cases - test Plans - Continuous testing - Debugging Principles - System Usability - Measuring User Satisfaction - Case Studies.

Recommended Texts:
1. Ali Bahrami - Object Oriented Systems Development - McGraw Hill International Edition - 1999.

2. Grady Booch- Object Oriented Analysis and design –Addison Wesley.

COURSE OUTCOME

CO1: Classify various phases of software development life cycle and develop software using object oriented techniques and methodologies with case studies.
CO2: Apply object-oriented approach from traditional approach to design and development the system.
CO3: Construct various UML models for various development stages of System using the appropriate UML notations.
CO4: Analyze and apply design issues to rectify the performance and good system design that is recognized by various object relationships like inheritance, association and dependency.

Subject Name: Multimedia System   **Year: III**
Subject Code: SEZ6D   **Semester: VI**

Unit-1: What is Multimedia**:** Definitions - CD-ROM and the Multimedia Highway - Where to use Multimedia - Introduction to MakingMultimedia: The stages of a Project - What You Need - MultimediaSkills and Training**:** The team - Macintosh and Windows ProductionPlatforms**:** Macintosh Versus PC - The Macintosh Platform - The Windows Multimedia PC Platform - Networking Macintosh and Windows Computers-Hardware Peripherals**:** Connection - Memory and Storage Devices - Input Devices - Output Hardware - Communication Devices.

Unit-2: Basic Tools**:** Text Editing and Word Processing Tools - OCR Software - Painting and Drawing Tools - 3-D Modeling and Animation Tools - Image-Editing Tools - Sound Editing Tools - Animation, Video and Digital Movie Tools - Helpful Accessories - Making InstantMultimedia: Linking Multimedia Objects - Office Suites - Word Processors - Spreadsheets - Databases - Presentation Tools**.** Multimedia Authoring Tools: Types of Authoring Tools - Card-and-Page-Based Authoring Tools - Icon-Based Authoring Tools - Time-Based Authoring Tools - Object-Oriented Authoring Tools - Cross-Platform Authoring Notes

Unit-3: Text: The Power of Meaning - About Fonts and Faces - Using Text in Multimedia - Computers and Text - Font Editing and Design Tools - Hypermedia and Hypertext - Sound**:** The Power of Sound - Multimedia System Sounds - MIDI Versus Digital Audio - Digital Audio - Making MIDI Audio - Audio File Formats - Working with Sound on the Macintosh - Notation Interchange File Format (NIFF) - Adding Sound to Your Multimedia Project - Toward Professional Sound: The Red Book Standard - Production Tips

Unit-4: Images: Making Still Images -Color - Image File Formats. Animation: The Power of Motion - Principles of Animation - Making Animations That Work -Video**:** Using Video - How Video works - Broadcast Video Standards - Integrating Computers and Television - Shooting and Editing Video - Video Tips - Recording Formats - Digital Video.

Unit-5: Planning and Costing **:** Project Planning - Estimating - RFPs and Bid Proposals **-** Designing and Producing **:** Designing - Producing - Content and Talent **:** Acquiring Content - Using Content Created by Others - Using Content Created for a Project - Using Talent - Delivering **:** Testing - Preparing for Delivery - Delivering on CD-ROM - Compact Disc Technology - Wrapping It Up - Delivering on the World Wide Web.

Recommended Texts:

1. Tay Vaughan - Multimedia: Making it Work. - Fourth Edition - Tata McGraw Hill Edition - 1999.
2. Walterworth John A - Multimedia Technologies and Application - Ellis Horwood Ltd. - London - 1991.
3. John F Koegel Buford - Multimedia Systems - Addison Wesley - First Indian Reprint - 2000.

COURSE OUTCOME

CO1: Create by understanding the tools and techniques to combine different media like image, sound, text, animation and graphic.

CO2: Identify terminology associated with the concepts, techniques, and processes used throughout the multimedia environment.

CO3: Learn importance of multimedia processes, industry-standard software as well as computer hardware and software associated in both Mac and Windows platforms.