



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.

PO3: Acquire the required competencies to face the challenges and they will develop their communication and professional skills to compete in the industry.

PO4: Apply their inherent skills with absolute focus to function as a successful entrepreneur.

PO5: Develop practical skills to provide solutions to industry, society and business.

PO6: Develop strong commitment towards social responsibility through ethical programming.

PO7: Recognize and engage in self-directed lifelong learning.

PO8: Improve analytical and critical thinking.

PO9: Analyze a problem and identify the requirements for solution.

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.

PSO7: Solve mathematical and statistical problems

SUBJECT: PROBLEM SOLVING USING PYTHON
SUBJECT CODE: BCE-CSC01

YEAR: I
SEMESTER: I

UNIT – I

Introduction: The essence of computational problem solving – Limits of computational problem solving-Computer algorithms-Computer Hardware-Computer Software-The process of computational problem solving-Python programming language - Literals - Variables and Identifiers - Operators - Expressions and Data types.

UNIT - II

Control Structures: Boolean Expressions - Selection Control - If Statement- Indentation in Python- Multi-Way Selection -- Iterative Control- While Statement- Infinite loops- Definite vs. Indefinite Loops- Boolean Flags and Indefinite Loops. Lists: List Structures - Lists in Python - Iterating over lists in Python.

UNIT - III

Functions: Program Routines- Defining Functions- More on Functions: Calling Value-Returning Functions- Calling Non-Value-Returning Functions- Parameter Passing - Keyword Arguments in Python - Default Arguments in Python-Variable Scope.

UNIT - V

Objects and their use: Software Objects - Turtle Graphics – Turtle attributes-Modular Design: Modules - Top-Down Design - Python Modules - Text Files: Opening, reading and writing text files - String Processing - Exception Handling.

UNIT - V

Dictionaries and Sets: Dictionary type in Python - Set Data type. Object Oriented Programming using Python: Encapsulation - Inheritance – Polymorphism. Recursion: Recursive Functions.

TEXT BOOK:

1. Charles Dierbach, “Introduction to Computer Science using Python - A computational Problem solving Focus”, Wiley India Edition, 2015.

REFERENCE BOOKS:

1. Mark Lutz, “*Learning Python Powerful Object Oriented Programming*”, O’reilly Media 2018, 5th Edition.
2. Timothy A. Budd, “*Exploring Python*”, Tata MCGraw Hill Education Private Limited 2011, 1st Edition.
3. Allen Downey, Jeffrey Elkner, Chris Meyers, “*How to think like a computer scientist: learning with Python*”, 2012.
4. Sheetal Taneja & Naveen kumar, “*Python Programming a Modular approach – A Modular approach with Graphics, Database, Mobile and Web applications*”, Pearson, 2017.
5. Ch Satyanarayana M Radhika Mani, B N Jagadesh, “*Python programming*”, Universities Press 2018.

WEB REFERENCES

- <http://interactivepython.org/courselib/static/pythonds>
- <http://www.ibiblio.org/g2swap/byteofpython/read/>
- <http://www.diveintopython3.net/>
- <http://greenteapress.com/wp/think-python-2e/>
- NPTEL & MOOC courses titled Python programming
- http://spoken-tutorial.org/tutorial-search/?search_foss=Python&search_language=English
- <http://docs.python.org/3/tutorial/index.html>

COURSE OUTCOME

- CO1:** Describe the core syntax and semantics of Python programming language.
- CO2:** Interpret the fundamental Python syntax and the use of Python control flow statements
- CO3:** Explain the need for working with functions in Python.
- CO4:** Develop simple turtle graphics programs in Python.
- CO5:** Explain the usage of Dictionaries, Sets and Object-Oriented programming concepts in Python.

SUBJECT NAME: ALLIED MATHEMATICS I
SUBJECT CODE: BMA-CSA01

YEAR: I
SEMESTER: I

UNIT 1: Algebra And Numerical Methods:

Algebra: Summation of series - simple problems.

Numerical Methods: Operators E, Δ, V , difference tables- Newton-Raphson method- Newton's forward and backward interpolation formulae for equal intervals, Lagrange's interpolation formula. Chapter 2, Section 2.1.3, 2.2, 2.2.1, 2.3, 2.3.3 Chapter 3, Section 3.4.1 and Chapter 5, Section 5.1 and 5.2.

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 of matrix using Cayley - Hamilton theorem.

Chapter 4, Section 4.1.1 to 4.1.6, 4.5, 4.5.2, 4.5.3.

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-simple problems.

Chapter 3, Section 3.1 to 3.4.1(omit section 3.2.1)

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 .

Chapter 6, Section 6.1 to 6.3.

UNIT 5 : Differential Calculus:Successive differentiation, nth derivatives, Leibnitz theorem (without proof) and applications, Jacobians, Curvature and radius of curvature in Cartesian co-ordinates, maxima and minima of functions of two variables- Simple problems

Chapter 1, Section 1.1 to 1.3.1 and 1.4.3.

Content and treatment as in

Allied Mathematics, Volume I and II, by P. Duraipandian and S. Udayabaskaran, S. Chand Publications

Reference:-

1. S. Narayanan and T.K. Manickavasagam Pillai – Ancillary Mathematics, S. Viswanathan Printers, 1986, Chennai.
2. Allied Mathematics by Dr. A. Singaravelu, Meenakshi Agency.

E-Resources:

1. <http://www.themathpage.com>
2. <http://nptel.ac.in>

COURSE OUTCOME:

- CO1:** Evaluate the summation of series, Operators, Newton-Raphson Method, Newton's forward and backward formulae, Lagrange's Formula.
- CO2:** Calculate symmetric, Skew-Symmetric, Hermetian, Eigen Values and Vectors, Cayley – Hamilton theorem.
- CO3:** Determine Polynomial Equations, irrational and complex roots, transformation of equation, Reciprocal equation,.
- CO4:** Explain the concepts of expansions of $\sin\theta$, $\cos\theta$ and $\tan\theta$ in a series of powers of " θ " Hyperbolic and inverse hyperbolic function.
- CO5:** Understand the concepts of Successive differentiation, Leibnitz theorem, Jacobians, curvature, radius of curvature and maxima and minima of functions.

LIST OF EXERCISES:

1. Program to convert the given temperature from Fahrenheit to Celsius and vice versa depending upon user's choice.
2. Program to calculate total marks, percentage and grade of a student. Marks obtained in each of the five subjects are to be input by user. Assign grades according to the following criteria:
Grade A: Percentage ≥ 80 Grade B: Percentage ≥ 70 and < 80
Grade C: Percentage ≥ 60 and < 70 Grade D: Percentage ≥ 40 and < 60 Grade E: Percentage < 40
3. Program, to find the area of rectangle, square, circle and triangle by accepting suitable input parameters from user.
4. Program to display the first n terms of Fibonacci series.
5. Program to find factorial of the given number using recursive function.
6. Write a Python program to count the number of even and odd numbers from array of N numbers.
7. Python function that accepts a string and calculate the number of upper case letters and lower case letters.
8. Python program to reverse a given string and check whether the give string is palindrome or not.
9. Write a program to find sum of all items in a dictionary.
10. Write a Python program to construct the following pattern, using a nested loop 1
22
333
4444
55555
666666
7777777
88888888
99999999
11. Read a file content and copy only the contents at odd lines into a new file.
12. Create a Turtle graphics window with specific size.
13. Write a Python program for Towers of Hanoi using recursion
14. Create a menu driven Python program with a dictionary for words and their meanings.
15. Devise a Python program to implement the Hangman Game.

COURSE OUTCOME

- CO1:** Develop simple programs using input statements of Python programming language.
- CO2:** Implement various control structures of Python in simple programs.
- CO3:** Manipulate files using Python statements.
- CO4:** Develop simple turtle graphics window and towers of Hanoi using recursion in Python.
- CO5:** Implement menu driven Python programs and game programs like Hangman.

SKPDC

SUBJECT: BASICS OF RETAIL MARKETING

YEAR: I

SUB CODE: CNE1B

SEMESTER - I

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

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

Unit – III: Retail location factors – Branding in Retailing – private labeling – Franchising concept

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

Unit – V: 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.

CO5: Study chain management in marketing and role of IOT

SUBJECT: OBJECT ORIENTED PROGRAMMING CONCEPTS USING C++
SUBJECT CODE: BSA-CSC03

YEAR: I
SEMESTER: II

UNIT - I

Introduction to C++ - key concepts of Object-Oriented Programming –Advantages – Object Oriented Languages – I/O in C++ - C++ Declarations. Control Structures : - Decision Making and Statements : If ..else, jump, goto, break, continue, Switch case statements - Loops in C++ : for, while, do - functions in C++ - inline functions – Function Overloading.

UNIT - II

Classes and Objects: Declaring Objects – Defining Member Functions – Static Member variables and functions – array of objects –friend functions – Overloading member functions – Bit fields and classes – Constructor and destructor with static members.

UNIT- III

Operator Overloading: Overloading unary, binary operators – Overloading Friend functions – type conversion – Inheritance: Types of Inheritance – Single, Multilevel, Multiple, Hierarchal, Hybrid, Multi path inheritance – Virtual base Classes – Abstract Classes.

UNIT - IV

Pointers – Declaration – Pointer to Class , Object – this pointer – Pointers to derived classes and Base classes – Arrays – Characteristics – array of classes – Memory models – new and delete operators – dynamic object – Binding, Polymorphism and Virtual Functions.

UNIT - V

Files – File stream classes – file modes – Sequential Read / Write operations – Binary and ASCII Files – Random Access Operation – Templates – Exception Handling - String – Declaring and Initializing string objects – String Attributes – Miscellaneous functions .

TEXT BOOK:

1. E. Balagurusamy, “*Object-Oriented Programming with C++*”, TMH 2013, 7th Edition.

REFERENCE BOOKS:

1. Ashok N Kamthane, “*Object-Oriented Programming with ANSI and Turbo C++*”, Pearson Education 2003.
2. Maria Litvin & Gray Litvin, “*C++ for you*”, Vikas publication 2002.

WEB REFERENCES:

- NPTEL & MOOC courses titled Object oriented programming concepts using C++
- <https://alison.com/course/introduction-to-c-plus-plus-programming>

COURSE OUTCOME

- CO1:** Describe the basic concepts of OOPs and the control flow statements.
CO2: Interpret about concepts of classes, objects and member functions.
CO3: Explain the need for overloading functions in C++.
CO4: Discuss about pointer and array concepts in C++.
CO5: Explain the usage of files and strings in object oriented programming.

LIST OF EXERCISES:

1. Write a C++ program to demonstrate function overloading, Default Arguments and Inline function.
2. Write a C++ program to demonstrate Class and Objects
3. Write a C++ program to demonstrate the concept of Passing Objects to Functions
4. Write a C++ program to demonstrate the Friend Functions.
5. Write a C++ program to demonstrate the concept of Passing Objects to Functions
6. Write a C++ program to demonstrate Constructor and Destructor
7. Write a C++ program to demonstrate Unary Operator Overloading
8. Write a C++ program to demonstrate Binary Operator Overloading
9. Write a C++ program to demonstrate:
 - Single Inheritance
 - Multilevel Inheritance
 - Multiple Inheritance
 - Hierarchical Inheritance
 - Hybrid Inheritance
10. Write a C++ program to demonstrate Virtual Functions.
11. Write a C++ program to manipulate a Text File.
12. Write a C++ program to perform Sequential I/O Operations on a file.
13. Write a C++ program to find the Biggest Number using Command Line Arguments
14. Write a C++ program to demonstrate Class Template
15. Write a C++ program to demonstrate Function Template.
16. Write a C++ program to demonstrate Exception Handling.

COURSE OUTCOME

- CO1:** Demonstrate classes, objects, function overloading and the usage of inline functions.
CO2: Execute programs on the concepts of classes, objects and member functions.
CO3: Implement inheritance concepts in C++.
CO4: Apply various file concepts of C++ with object oriented programming.
CO5: Implement programs to execute class templates and function templates

UNIT 1 : Integral Calculus: Bernoulli's formula – Reduction formulae $\int_0^{\frac{\pi}{2}} \sin^n x dx$, $\int_0^{\frac{\pi}{2}} \cos^n x dx$, $\int_0^{\frac{\pi}{2}} \sin^m x \cos^n x dx$ (m, n being positive integers), Fourier series for functions in $(0, 2\pi)$, $(-\pi, \pi)$.
Chapter 2: Section 2.7 & 2.9, Chapter 4: Section 4.1.

UNIT 2 : Differential Equations: Ordinary Differential Equations: second order non-homogeneous differential equations with constant coefficients of the form $ay'' + by' + cy = X$ where X is of the form e^{ax} , $\cos \beta x$ and $e^{ax} \sin \beta x$ -Related problems only.
Partial Differential Equations: Formation, complete integrals and general integrals, four standard types and solving Lagrange's linear equation $Pp + Qq = R$.
Chapter 5: Section 5.2.1, Chapter 6: Section 6.1 to 6.4

UNIT 3 : Laplace Transforms: Laplace transformations of standard functions and simple properties, inverse Laplace transforms, Application to solution of linear differential equations up to second order-simple problems.
Chapter 7: Section 7.1.1 to 7.1.4 & 7.2 to 7.3

UNIT 4 : Vector Differentiation: Introduction, Scalar point functions, Vector point functions, Vector differential operator Gradient, Divergence, Curl, Solenoidal, irrotational, identities.
Chapter 8, Section 8.1 to 8.4.4

UNIT 5 : Vector Integration: Line, surface and volume integrals, Gauss, Stoke's and Green's theorems (without proofs). Simple problems on these.
Chapter 8, Section 8.5 to 8.6.3.

Content and treatment as in

Allied Mathematics, Volume I and II, P. Duraipandian and S. Udayabaskaran, S. Chand Publications.

Reference:-

1. S. Narayanan and T.K. Manickavasagam Pillai – Ancillary Mathematics, S. Viswanathan Printers, 1986, Chennai.
2. Allied Mathematics by Dr. A. Singaravelu, Meenakshi Agency.

E-Resources:

1. <http://www.sosmath.com>
2. http://www.anlyzemath.com/Differential_Equations/applications.html

COURSE OUTCOME

- CO1:** Describe the concepts of Bernoulli's Formula, Reduction Formula, Fourier series.
- CO2:** Determine the Second order non-homogeneous differential equations, P.D.E formation and four standard types, Lagrange's linear equation.
- CO3:** Evaluate Laplace transformation, Inverse Laplace transforms, Application to solution of linear differential equations up to second order.
- CO4:** Calculate Scalar and Vector point functions, Gradient, Divergence, Curl, Solenoidal.
- CO5:** Explain the concepts of Surface and Volume integrals, Gauss, Stoke's and Green's Theorems and Problems.

SUBJECT: CONCEPT OF SELF HELP GROUP
SUB CODE: MNM2J

YEAR: I
SEMESTER - II

Unit – I: Meaning, Concept and functions of SHGS

Unit – II: Women empowerment through SHGS

Unit – III: Micro finance through SHGS

Unit – IV: Social Development through SHGS

Unit – V: 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.

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.

1. Recommended Texts

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

2.Reference Books

- i. Robert Lafore, Object Oriented Programming in Microsoft C++, Galgotia publication.
- ii.. H.Schildt, C++,1998,The Complete Reference-1998-TMH Edition, 1998
- iii.R. Kruse C.L. Tondo and B. Leung ,1997, Data Structures and Program design in C, PHI.
- iv. Cansam, Augenstein, Tenenbaum, Data Structures using C & C++, PHI
- v. D.Samantha,2005, Classic Data Structures, PHI, New Delhi.

COURSE OUTCOME

CO1: Define basic concepts of C++ like identifiers, variables, operators, control structures, etc..

CO2: Differentiate classes and objects ,types of inheritance, etc...

CO3: Handles files for various file operations like opening ,closing, updating, etc..

CO4: Explain basic data structures to represent data and its working.

CO5: Define advanced data structures like trees and graph.

SUBJECT: MICROPROCESSORS AND ITS APPLICATIONS

YEAR:II

SUB 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.

1. Recommended Texts

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

COURSE OUTCOME

CO1: Studying about the basics of assembly language with its instructions, explanation about hardware chip installed in technology with its architecture design and pin functions.

CO2: Study how to write assembly program with its syntax, semantics ,looping, counting and indexing variables and its values. Define various address modes in which the instruction is written with its broad classification.

CO3: Study about advanced technology where microcontroller is implemented like MOD10 counter, timing for flashing lights and also stack and subroutines programs.

CO4: Study about various application oriented assembly language program like BCD to Binary, BCD to Hex, ASCII to BCD, BCD to LED, Binary to ASCII and some calculation program like addition, subtraction, multiplication and division.

CO5: Define various interrupts, how to access memory dynamically, functions for RAM and ROM ,interface of I/O and memory.

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 a 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 Table - *t*-Test and F-Test.

1. Recommended Texts

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

2. Reference Books

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

COURSE OUTCOME

CO1: Obtain the roots of linear equations and simultaneous equations.

CO2: Calculate the derivatives and integrals of numerical functions.

CO3: Find the measures of central tendency and dispersion.

CO4: Learn probability and various distribution functions of random variables.

CO5: Solve correlation and regression of variables and testing of hypothesis.

SKBPC

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 operations in C++ using arrays and pointers.

CO2: Implement queue operations in C++ using arrays and pointers.

CO3: Develop programs for evaluating expressions using infix and postfix operations.

CO4: Apply the concepts of singly linked lists, doubly linked lists and in C++

CO5: Execute programs for graph search using depth first and breadth first methods.

SUBJECT: FINANCIAL ACCOUNTING

YEAR: II

SUBCODE:SBZ3C

SEMESTER III

Unit-1: Meaning and scope of accounting-Basic Accounting concepts and conversions-Objectives of Accounting-Accounting Transactions-Double entry book keeping-Journal, Ledger, preparation of Trial Balance-Preparation of Cash Book

Unit-2: Preparation of Final accounts of sole trading concerns-Adjustments to final accounts.

Unit-3: Classification and rectification of errors-preparation of suspense Account-Bank Reconciliation Statement

Unit-4: Depreciation-Meaning, Causes, types-problems based on Straight line and diminishing Balance methods.

Unit-5 :Meaning, features, defects, Statement of Affairs methods a conversion methods.(problem on statement of affairs method only)

1.Recommended Texts & Reference

1. Gupta R.L, Advanced Accountancy, S.Chand, Delhi.
2. Agarwala 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

CO 1: Discuss the Concept of financial accounting

CO2: Preparation of journal, ledger and trial balance

CO3: Analyze different types of cash book

CO 4: Preparation of final accounts

CO5: Rectifying the errors

CO 6 :Preparation of Bank Reconciliation Statement

CO7 : Enumerate methods of depreciation

CO8: Preparation of statements of affairs

SUBJECT: PROGRAMMING IN JAVA

YEAR: II

SUBCODE: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 Excepti 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.

1. Recommended Texts

- i. E. Balagurusamy ,2004,Programming with JAVA-2nd Edition, Tata McGraw-Hill Publishing Co.Ltd, New Delhi.
- ii. Her – rt Schildt,The Complete Reference JavaTM· 2- 5th Edition,Tata McGraw-Hill Publishing Co. Ltd,New Delhi.

2. Reference Books

- i. Y. Daniel Liang ,2003, An Introduction to JAVA Programming ,Prentice-Hall of India Pvt. Ltd.
- ii. Cay S. Horstmann and Gary Cornell,2005,Core JavaTM2 Volume I,Fundamental 7th Edition,Pearson Education.

COURSE OUTCOME

CO1: Understand the basic concepts of java.

CO2: Create classes.objects,interfaces and utilize different utilities.

CO3: Implement interfaces,packages and threads in various applications.

CO4: Manage errors,exceptions, graphics and files.

CO5: Understand the concepts of applets,AWT classes and Internetworking.

.SUBJECT: JAVA PROGRAMMING LAB

YEAR: II

SUBCODE:SAZ41

SEMESTER: IV

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: Utilize various utilities available in java in appropriate applications.

CO2: Manipulate strings using string and string buffer classes.

CO3: Implement threads with and without synchronization.

CO4: Develop Applets with basic controls like buttons, labels etc..

CO5: Create a simple calculator by applying different layouts.

SUBJECT: OPERATING SYSTEMS
SUBCODE:SAZ4B

YEAR: II
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..

1. Recommended Texts

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

2.Reference Books

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

COURSE OUTCOME

CO1: Describe types of systems, concepts of OS structures, services, process management and threading, multitasking, IPC.

CO2: Explain manage resources, understand synchronizing concurrent process and handling deadlocks.

CO3: Define memory management, paging and segmentation schemes.

CO4: Describe about demand paging, page replacement algorithms and file system concepts.

CO5: Explain about I/O systems and storage structures.

SUBJECT: COMPUTER GRAPHICS
SUBCODE:SAZ4C

YEAR: II
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.

1. Recommended Texts

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

2. Reference Books

i. W.M.Newman and R.F.Sproull, 1997, 2nd Edition , Principles of Interactive Computer Graphics, Tata McGraw-Hill Publishing Co. Ltd.

ii .D.P.Mukherjee, 1999, Fundamentals of Computer Graphics and Multimedia, 1st Edition, Prentice-Hall of India Pvt. Ltd. – 1999.

iii .N. Krishnamurthy , 2002, Introduction to Computer Graphics, 1st Edition, Tata McGraw-Hill Publishing Co. Ltd.

iv. D.F.Rogers, 2001, Procedural Elements for Computer Graphics, 2nd Edition, Tata McGraw-Hill Publishing Co. Ltd.

v. Xiang and R.A. Plastock, 2002, Computer Graphics, Schaum's Outline Series, Tata McGraw- Hill Publishing Co.

COURSE OUTCOME

- CO1:** Explain the working of various graphics systems and input devices.
- CO2:** Describe various algorithms for line drawing, circle drawing and area filling.
- CO3:** Apply 2D transformation and clipping algorithms on images.
- CO4:** Display 3D images and apply various transformation techniques.
- CO5:** Eliminate and hide images using various methods.

SKPDC

SUBJECT: COST AND MANAGEMENT ACCOUNTING
SUBCODE:SBZ4A

YEAR: II
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

1.Recommended Texts & Reference

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

CO2- Discuss store's Records, store's Ledger, Inventory Control

CO3 - Enumerate methods of calculation of wages.

CO4 – Analyze different types of overheads and calculate Machi hour Rate

CO5 – Describe Fund Flow a Cash fl analysis

CO6 –Analyze the Ratio

CO7- Discuss Marginal Costing

CO8- Prepare Diff rent types of Budget

.

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

- Visit 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.

COURSE OUTCOME

CO1: Discuss Scope and importance of EVS.

CO2: Create Public awareness on environmental issues.

CO3: Explain structures and functions of ecosystem

CO4: Enumerate renewable and non-renewable natural resources

CO5: Describe bio-diversity, environmental pollution, environmental, policies and practices.

CO6: Explain link between human communities and the environment.

SUBJECT: DATABASE MANAGEMENT SYSTEMS

YEAR: III

SUBCODE1: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 Systems – 7th Edition – Addison Wesley - 2000.

COURSE OUTCOME

CO1: Explain the components of DBMS and apply normal techniques for efficient retrieval of data.

CO2: Show how the DDL and DML queries are constructed,executed and tested with single and multiple tables.

CO3: Demonstrate how forms and reports can be effectively designed using various form layouts and graphical, objects.

CO4: List the features of UI,handle various form events and generate reports and select the appropriate data storage methods.

CO5: Explore the jobs of DBA and build various types of databases ,Viz., distributed databases,client /server database and object oriented databases.

SUBJECT: SOFTWARE ENGINEERING

YEAR: III

SUBCODE: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 nd 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.

1. Recommended Texts

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

2. Reference Books

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

COURSE OUTCOME

CO1: Define software engineering, recognize various factors and develop a software project strategically.

CO2: Estimate of cost of development considering various factors and using software cost estimation techniques.

CO3: Define software requirements and specify requirements using formal languages and proessors.

CO4: Apply design guidelines and module criteria to develop various software modules and test design using various testing techniques.

CO5: Apply the techniques of software verification and validation for software quality assurance and apply maintenance tools and techniques.

SUBJECT: VISUAL PROGRAMMING
SUBCODE:SEZ5A

YEAR: III
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.

1. 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: Write simple VB application .customize VB forms using various controls and editing tools.

CO2: Identify the loop structure for developing VB programs and give examples for functions and procedures.

CO3: Develop VB program using advanced data types like list and arrays and reference control.

CO4: Develop menu oriented and MDI forms.

CO5: Apply advanced concepts of visual programming like file system handling and object linking and embedding.

SUBJECT: RDBMS LAB
SUBCODE:SAZ51

YEAR: III
SEMESTER V

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: Develop simple VB forms for performing basic operations like insertion, deletion and modification.

CO2: Write menu driven programs for various applications.

CO3: Implement MDI forms for Library information system and Savings bank account for banking.

CO4 : Generate reports with and without any criteria.

CO5: Create simple application with VB as front end and Mysql as back end.

SUBJECT: RESOURCE MANAGEMENT TECHNIQUES

YEAR: III

SUBCODE: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.

1. Recommended Texts

- i. Hamdy A. Taha: ,1996, Operation Research - An Introduction, 5th edition, Prentice Hall of India, Pvt. Ltd., New Delhi .
- ii.. Ackoff R.L. and Sasieni M. W,1968, Fundamentals of Operations Research, John Wiley and sons, New York.
- iii. Charnes A. Cooper W. and Hendersen A.,1953, Introduction to Linear Programming, Wiley and Sons, New York.
- iv. 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.

SKIP

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 Butt 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

1.Recommended Texts

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

2. Reference Books

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

COURSE OUTCOME

CO1: Discuss HTML code and VB Script to create web pages with aesthetic sense of designing.

CO2: Define the basics of JavaScript language.

CO3: Explain JavaScript document object model and various objects in detail.

CO4: Define various concepts of data communication and differentiate various types of networks and network models.

CO5: Establish secure client and server connection using SSL and Client certificates.

SKPDC

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 On Mouse event, onDbclick 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.
the site for the second time, and so on.

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: Develop simple VBScript and JavaScript applications.

CO2: Create static and dynamic WebPages.

CO3: Develop ASP programs using Request and Response objects.

CO4: Establish connection between Asp and databases to manipulate data.

CO5: Design document objects using various controls for different applications.

SUBJECT: DATA COMMUNICATION AND NETWORKING

YEAR: III

SUBCODE: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.

1. Recommended Texts

- i. Behrouz and Forouzan, ,Introduction to Data Communication and Networking, 2nd Edition, TMH.

2. Reference Books

- i. Jean Walrand 1998, Communication Networks (A first Course), Second Edition, WCB/McGraw Hill.
- ii. Behrouz and Forouzan, 2006, Data Communication and Networking, 3rd Edition, TMH.

COURSE OUTCOME

CO1: Define various concepts of data communication and differentiate various types of networks and network models.

CO2: Discuss various interface standards and modems and establish connection between systems using different media.

CO3: Explain the working of a telephone system and compare different IEEE standards and switching techniques.

CO4: Describe the working of Integrated Services Digital Network and ATM Protocol.

CO5: Explore various networking devices and routing algorithms.

SUBJECT: SOFTWARE TESTING

YEAR: III

SUBCODE: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.

1. Recommended Texts

- i. B. Beizer , 2003, Software Testing Techniques, II Edn., DreamTech India, New Delhi.
- ii. K.V.KK. Prasad , 2005, Software Testing Techniques, DreamTech. India, New Delhi.

2. Reference Books

- i. Burnstein, 2003, Practical Software Testing, Springer International Edn.
- ii. E. Kit, 1995, Software Testing in the Real World: Improving the Process, Pearson Education, Delhi.
- iii. R.Rajani, and P.P.Oak, 2004, Software Testing, Tata Mcgraw Hill, New Delhi.

COURSE OUTCOME

CO1: Apply appropriate testing and design styles to increase the productivity and quality of software.

CO2: Implement various testing techniques like flow / graph / path testing.

CO3: Compare and contrast different testing strategies viz., Data flow testing, Domain testing.

CO4: Define various quantitative measures to estimate the progress and quality of software testing.

CO5: Describe various testing techniques like logic based testing, decision table and state transition testing

SUBJECT: OBJECT ORIENTED ANALYSIS AND DESIGN

YEAR:III

SUBCODE: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.

1.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: Apply object oriented analysis and design methodologies to develop software.

CO2: Analyze use case models and identify classes, attributes, relations, methods and their responsibilities.

CO3: Design software by applying various design processes and design axioms.

CO4: Analyze the problem scenario and design an aesthetic User Interface.

CO5: Propose appropriate testing strategy and design various test cases to develop a system with user satisfaction.

SUBJECT: MULTIMEDIA SYSTEMS
SUBCODE:SEZ6D

YEAR: III
SEMESTER :VI

Unit-1: What is Multimedia: Definitions - CD-ROM and the Multimedia Highway - Where to use Multimedia - Introduction to Making Multimedia: The stages of a Project - What You Need - Multimedia Skills and Training: The team - Macintosh and Windows Production Platforms: 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 Instant Multimedia: 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 a CD-ROM : 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.

1. Recommended Texts:

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

COURSE OUTCOME

CO1: Define basic multimedia concepts and choose multimedia platforms as per the requirement / situation.

CO2: Compare various text editing tools, sound editing tools, multimedia presentation tools and authoring tools.

CO3: Manipulate text in multimedia and compare various audio file formats.

CO4: Utilize various image file formats, animation principles and various video standards to develop images, animations and videos.

CO5: Prepare multimedia system plan with cost estimation and design a multimedia system for delivery..