

SEMESTER- II

COURSE: OPERATING SYSTEMS

CODE:

CREDITS: 04

UNIT I - INTRODUCTION

Operating System structure; Operating System operations; Process management; Memory management; Storage management; Protection and security; Distributed system; Special-purpose systems; Computing environments. Operating System Services; User - Operating System interface; System calls; Types of system calls; Virtual machines

UNIT II - PROCESS MANAGEMENT

Process concept; Process scheduling; Operations on processes; Inter-process communication. Multi-Threaded Programming: Overview; Multithreading models; Thread Libraries; Threading issues. Process Scheduling: Basic concepts; Scheduling criteria; Scheduling algorithms; Multiple-Processor scheduling; Thread scheduling.

UNIT III - PROCESS SYNCHRONIZATION AND DEADLOCKS

Synchronization: The Critical section problem; Peterson's solution; Synchronization hardware; Semaphores; Classical problems of synchronization; Monitors.
Deadlocks: System model; Deadlock characterization; Methods for handling deadlocks; Deadlock prevention; Deadlock avoidance; Deadlock detection and recovery from deadlock.

UNIT IV - THE LINUX OPERATING SYSTEM

Linux history; Design principles; Kernel modules; Process management; Scheduling; Memory management; File systems, Input and output; Inter-process communication.

Text Books:

1.Abraham Silberschatz, Peter Baer Galvin, Greg Gagne: Operating System Principles, 8th edition, Wiley India, 2009.

Reference Books:

1.D.M Dhamdhare: Operating systems - A concept based Approach, 2nd Edition, Tata McGraw- Hill, 2002.

2.P.C.P. Bhatt: Introduction to Operating Systems: Concepts and Practice, 2nd Edition, PHI, 2008.

3.Harvey M Deital: Operating systems, 3rd Edition, Pearson Education, 1990.

COURSE: DATA STRUCTURES USING C++

CODE:

CREDITS: 04

UNIT I- ARRAYS

Abstract Data Types and the C++ Class, An Introduction to C++ Class- Data Abstraction and Encapsulation in C++- Declaring Class Objects and Invoking Member Functions- Special Class Operations- Miscellaneous Topics- ADTs and C++Classes, The Array as an Abstract Data Type, The Polynomial Abstract Data type- Polynomial Representation- Polynomial Addition. Spares Matrices,Introduction- Sparse Matrix Representation- Transposing a Matrix- Matrix Multiplication, Representation of Arrays.

UNIT II - STACKS AND QUEUES

Templates in C++, Template Functions- Using Templates to Represent Container Classes, The Stack Abstract Data Type, The Queue Abstract Data Type, Subtyping and Inheritance in C++, Evaluation of Expressions, Expression- Postfix Notation- Infix to Postfix.

UNIT III - LINKED LISTS

Single Linked List and Chains, Representing Chains in C++, Defining a Node in C++- Designing a Chain Class in C++- Pointer manipulation in C++- Doubly Linked Lists, Generalized Lists, Representation of Generalized Lists- Recursive Algorithms for Lists- Reference Counts, Shared and Recursive Lists

UNIT IV - ADVANCED TOPICS IN DATABASES

Introduction, Terminology, Representation of Trees, Binary Trees, The Abstract Data Type, Properties of Binary Tress, Binary Tree Representations, Binary Tree Traversal and Tree Iterators, Introduction, Inorder Traversal Preorder Traversal, Postorder Traversal, Binary Search Trees, Definition, Searching a Binary Search Tree

PRACTICAL

Credits: 02

UNIT I- ARRAY

Abstract Data Types and the C++ Class, An Introduction to C++ Class- Data Abstraction and Encapsulation in C++- Declaring Class Objects and Invoking Member Functions- Special Class Operations- Miscellaneous Topics- ADTs and C++Classes

UNIT II - STACKS AND QUEUES

Templates in C++, Template Functions- Using Templates to Represent Container Classes, The Stack Abstract Data Type, The Queue Abstract Data Type, Subtyping and Inheritance in C++, Evaluation of Expressions, Expression- Postfix Notation- Infix to Postfix.

UNIT III – LINKED LISTS

Single Linked List and Chains, Representing Chains in C++, Defining a Node in C++- Designing a Chain Class in C++- Pointer manipulation in C++- Doubly Linked Lists

UNIT IV - TREES

Binary Trees, The Abstract Data Type, Properties of Binary Tress, Binary Tree Representations, Binary Tree Traversal and Tree Iterators,

References:-

1. Data structures, Algorithms and Applications in C++, S.Sahni, University Press (India) Pvt.Ltd, 2nd edition, Universities Press, Pvt. Ltd.
2. Data structures and Algorithm Analysis in C++, Mark Allen Weiss, Pearson Education. Ltd., Second Edition.
3. Data structures and Algorithms in C++, Michael T.Goodrich, R.Tamassia and .Mount, Wiley student edition, John Wiley and Sons.

COURSE: COMPUTATIONAL MATHEMATICS

CODE:

CREDITS: 04

UNIT I - ERRORS

Introduction - Significant digits. Rounding off numbers - Relative error and the number of correct digits - General error formula -Application of errors to the fundamental operations of arithmetic.

UNIT II – SOLUTION OF ALGEBRAIC AND TRANSCENDENTAL

Graphical solution of equation - Locating roots of equations - Bisection Method -Method of False Position - Newton Raphson Method.

UNIT III – INTERPOLATION&NUMERICAL INTEGRATION

Interpolation and Extrapolation - Lagrange Interpolation - Newton's Interpolation - Introduction –Numerical Integration - Trapezoidal Rule, Simpson's 1/3and 3/8 rule.

UNIT IV – SYSTEM OF LINEAR EQUATIONS

Introduction - Gauss-Seidel Method – JacobisMethod - Power Method - Application Problems

Text Books:

1. Numerical Methods, Kandasamy P.
2. Introductory Methods of Numerical Analysis, Sastry S S.
3. Numerical Methods in Engineering and Science, Grewal B S.
4. Numerical Methods for Engineering Applications (New Perspectives on the Past),Joel H Ferziger.
5. Numerical Methods for Engineers: With Software and Programming Applications, Steven C Chapra and Raymond P Canale.
6. Numerical Methods: Algorithms and Applications (Featured Titles for Numerical Analysis), Laurene V Fausett.

COURSE: VISUAL BASIC PROGRAMMING

COURSE CODE :

CREDITS : 04

Unit I

Introduction to Visual Programming: The IDE, The Visual Programming editor. The form object: Properties, events and methods of forms; Properties – Name, Caption, Back color, Border style, controlbox, maxbutton, moveable, startup position, height, width, left, top, scale mode, window, state-Events –load, unload, Clerk, Activate, Deactivate, Resize, methods – Show, hide, cls, Unload, print. -Controls –Properties and events of different controls such as command buttons, labels, textboxes image controls, timer, horizontal and vertical scroll bars, option buttons, check boxes, frames list and combo boxes. Predefined Dialog Boxes – MsgBox and Input Box

Unit II

Programming: Data types: variables; declaration and scope arithmetic operations, Study of form and code modules, private and public procedures, Main procedure, Sub and Functions. Mathematical and string Functions-Branching and Looping Statement; If – Then, if –Then – Else and Nested If Statements; Select Case –different forms; For – Next, while – Wend and Do – Loops statements; Arrays- declaration. Static and dynamic arrays. Array and Function, menus and toolbars-Creating menus and toolbars: Working with the menu editor, Designing Multiple Document interface forms. Microsoft common controls

Unit III

Dynamic Link Libraries & Database connectivity – DAO and ADO Tables and Queries, ActiveX Data objects-Visual C++ Programming: Objects-Classes-VC++Components – Resources-Event Handling – Menus – Dialog Boxes – Importing VBX Controls – Files – MFC File Handling-Document View Architecture – Serialization-Document View Architecture – Serialization

Unit IV -Tensile testing of textiles

Interfacing Other Applications – Multiple Document Interface (MDI)-Splitter Windows – Exception Handling – Debugging-Object Linking and Embedding (OLE) – Database Application-DLL- ODBC

PRACTICAL

CREDITS : 2

- 1 Design a User Interface (UI) to accept the student details such as name, department and total marks. Validate the input data and calculate the percentage and division.

- 2 Design a VB application which has MDI and Child forms. Create a menu having the items such as file (New, Open), Format (Font, Regular, Bold, Italic) and Exit in the MDI form. Also create a text box and use a Common Dialog Box control for changing the font, fore color and back color of the text box.

- 3 VB program to Encrypt and Decrypt a string. (Use Rnd() to generate the Encryption and Decryption keys).

- 4 Create a Vending machine application that display images for four snacks and corresponding labels that indicates the number for each snack. The GUI should contain a text box in which the user specifies the number of desired snack. When the dispense snack button is clicked, it should display on a label the name of the snack dispensed. At end it should print (display) the bill of the product.

- 5 Design a small Alarm Clock Application.

- 6 Write a VB Program to Validate the username and password form the database and display the appropriate message.(Use Data Control)

- 7 Design a VB application to accept the Item Details (Item ID, Item Name, MFD Date, Unit of Measure and RatePerUnit). Item Id should be a system generated ID. The application should allow operations –Add, Modify, Delete, Update and Navigations of the items. Use ADO Data controls and Grid controls.

- 8 Design a VB application to record the employee details such as EmpId, EmpName, Designation and BaiscPay . Calculate the DA, HRA, Deduction and Gross Salary. (Make the necessary assumptions) Use Select ..case for decision making.

- 9 VB program to calculate the simple interest and compound interest. Use DLLs for the calculation.

- 10 Create a VB application which is linked to book database. The application should allow the user to perform a search of the book from the database, when user clicks a button .User should be able to search any book with its title, ISBN no. or Author Name.
- 11 VC++ program to create a Dialog box and display the position of mouse pointer within the dialog box.
- 12 VC++ program to create and load a simple menu in a Window.

References:

1. Gurumit Singh, “Visual Basic 6”, First Edition, Firewall Media, 2007.
- 2.CharlesPetzold, “Windows Programming”, 5th Edition, Microsoft Press, 1999.
- 3.SteveHolzner, “Visual C++ Programming”, Second Edition