

Computer Technology

Skill Based Elective- I

(Semester - III)

Computer Fundamentals

Unit I

Computer Fundamentals

Computer & Operating system fundamentals - Ms-Dos, Ms-Windows & Linux - Role of OS in software industry - Components of a computer system - Input & Output Devices - Memory Handling- Storage Devices.

Unit II

MS-Word

Introduction to Ms-Word & User Utilities - Exploring Template & Formation of Documents - Table handling - Mail Merge & Print Process- Handling Multi lingual Mode - Tamil / Hindi Versions.

Unit III

MS- Excel & MS- Power Point

Introduction to Spreadsheet.- Exploring the Workbook Window - Formatting Cells/Worksheet -Working with Formula, Function & Charts - Filtering Data & Printing a Presentation- Introduction to MS-Power Point - Creating Templates - Font & Color Editing - Adding Multi media effects - Consolidating Presentation using Ms-Power Point.

Unit IV

Accounting Packages

Introduction to Accounting Packages - Need & Advantages - Tally - Tally Overview - Accounting through Tally - Reports using Tally - Introduction & Overview of other Accounting Packages

Unit V

Case Study on customized tools & Run time Methodologies

References

Ghosh Dastidar, Chattopadhyay and Sarkar, " Computers and Computation - A Beginner's Guide ",Prentice Hall of India, 1999.

Nelson, Microsoft Office 97, Tata McGraw Hill, 1999.

Taxali, " PC Software for Windows Made Simple ", Tata McGraw Hill, 1999

Skill Based Elective – II Programming in C

(Semester – IV)

Unit - I

Introduction to C Programming

Programming in C - Structure of C programs - Compilation and execution of C programs - Debugging Techniques - Data Types and Sizes - Declaration of variables – Modifiers - Identifiers and keywords - Symbolic constants, Storage classes - Enumerations, command line parameters-

Unit- II

Operators & Control Statements

Introduction to operators - Unary operators - Arithmetic & logical operators - Bit wise operators - Assignment operators and expressions - Conditional expressions - Precedence and order of evaluation - Control statements: if-else, switch, break, continue - The comma operator, goto statement - Loops: for, while, do-while.

Unit - III

Functions & Arrays

Function declaration, definition and function call - Parameter passing: call by value, call by reference, Recursive functions, Multi file programs - linear arrays, multidimensional arrays Passing arrays to functions, Arrays and strings.

Unit - IV

Structure, Union & Pointers

Definition and differences - self-referential structure - Pointers: value at (*) and address of (&) operator - Pointers: Pointer to pointer, Dynamic Memory Allocation - Pointers: calloc and malloc functions - Pointers: Array of pointers, function of pointers, structures and pointers

Unit- V

File Handling in C

Introduction to Files - Opening and closing a data file - Creating a data file, read and write functions.

Reference

Balagurusamy, E., Programming in ANCI C, Tata Mc Graw Hill, New Delhi, 2000

Skill Based Elective – III

(Semester – V)

Object Oriented Programming Using C++

Unit -I

Introduction to C ++

Overview of C++ - Program development environment - Prototype of main() function, Data types - Programs using IDE and through command line - IDE features Classes & Objects : Classes, Structure & classes, Union & Classes - Friend function, Friend classes, Inline function, Scope resolution operator, Static class members, Static data member, Static member - function, Passing objects to function, Returning objects, Object assignment.

Unit -II

Arrays & Pointers

Array, Pointers References & The Dynamic Allocation operators - Array of objects, Pointers to object, Type checking C++ pointers - The This pointer, Pointer to derived types, Pointer to class members - References: Reference parameter, Passing references to objects - Returning reference, Independent reference, C++ 's dynamic - allocation operators, Initializing allocated memory, Allocating Array - Allocating objects - Constructor & Destructor.

Unit -III

Function & Operator overloading

Function & operator overloading : Function overloading, Overloading constructor function finding the address of an overloaded function - Operator Overloading: Creating a member operator function, Creating Prefix & Postfix forms of the increment & decrement operation - Overloading the shorthand operation (i.e. +=,-= etc), Operator - overloading restrictions, Operator overloading functions.

Unit - IV

Inheritance & Polymorphism

Inheritance : Base class Access control - Protected base class inheritance, Inheriting multiple base classes - Constructors, destructors & Inheritance, Granting access, Virtual base classes - Virtual functions & Polymorphism : Virtual function, Pure Virtual functions - Early Vs. late binding

Unit - V

I/O Systems

The C++ I/O system basics : C++ predefined streams, Formatted I/O: Formatting using the I/O members – Setting & Clearing all Flags.

References

Balagurusamy, E., Programming in C++, Tata Mc Graw Hill, New Delhi, 2001 Subburaj,
R., Object Oriented Programming With C++, Tata Mc Graw Hill, New Delhi, 2002

Skill Based Elective – IV

(Semester – V)

JAVA PROGRAMMING

Unit - I

OVERVIEW

An overview of Programming Languages - Translators - Evolution of Java - Structure of a Java Program - First Java Program - Input and Output - Java Environment Setup
Primitive Data Types -Reference Data Type – Variables – Constants - Enumerated Constants - Operators and Expressions

Unit - II

STATEMENTS & ARRAYS

Labeled-statement - Expression Statement - Null Statement - Compound Statement - Control Statement - Jump-statement - Declaration Statement - try-throw-catch-finally Statements Declaring Arrays - Creating Arrays - Assigning Values to Array Elements - Assigning Array to Another Array - Library methods for Arrays - Defining Multidimensional Arrays - Uneven Multidimensional Arrays - Accessing Multidimensional Array Elements - Character Array - Passing Arrays to Functions

Unit- III

FUNCTIONS

Declaration, Definition, and Call - Main Method Arguments - Reference Variables - Method Overloading - Parameter Passing – Recursion - Scope of Variables - Return from Methods - More Examples

Unit -IV

PACKAGES & I / O

Processes and Threads - Life Cycle of a Thread - Thread Methods - Creating a Thread - Naming a Thread - Priority of Threads - Co-operative Threads and Preemptive Threads – Sleep - Joining a Thread - Thread Synchronization - Deprecated Calls - Thread Groups - Producer-Consumer Solution Using Semaphore- Java Standard Packages - Class java.lang.String - Class java. lang.Exception - Assert Statement - java.util.Formatter – collection framework.

Unit -V

SWING

GUI: Basic Building Blocks - Swing Class Hierarchy - Events and Listeners – Components – Layout – Japplet – Jpanel – JFrame - & Other Utility classes.

Reference

Debasish Jana, Java & Object Oriented Programming, Paradigm, 2002

Skill Based Elective- V

(Semester - VI)

VB.NET

Unit -I

Introduction to .NET

Introduction to .NET - NET Framework features & architecture – CLR - Common Type System MSIL, Assemblies and class libraries - Project basics, types of project in .Net - IDE of VB.NET- Menu bar, Toolbar, Solution Explorer, Toolbox - Properties Window, Form Designer, Output Window, Object Browser - The environment: Editor tab, format tab, general tab, docking tab - Methods and events.

Unit -II

Arrays, Functions & Loops

The VB.NET Language- Variables -Declaring variables, Data Type of variables, Forcing variables declarations - Scope & lifetime of a variable - Constants, Arrays, types of array, control array, Collections, Subroutines - Functions, Passing variable Number of Argument Optional Argument, Returning value from function - Control flow statements: conditional statement, loop statement. MsgBox & Inputbox.

Unit - III

Programming in VB.NET

Working with Forms : Loading, showing and hiding forms, controlling - One form within another. GUI Programming with Windows Form: Textbox, Label, Button, Listbox, Combobox, Checkbox, PictureBox, RadioButton, Panel, scroll bar, Timer, ListView, TreeView, toolbar, StatusBar. There Properties, Methods and events. OpenFileDialog, SaveFileDialog, FontDialog, ColorDialog, PrintDialog. Link Label - Designing menus : ContextMenu, access & shortcut keys.

Unit-IV

OOPS in VB.NET & ADO.NET

Object oriented Programming: Classes & objects, fields Properties, Methods & Events, constructor, inheritance. Access Specifiers: Public, Private, Protected. Overloading, My Base & My class keywords - Overview of OLE, Accessing the WIN32 API from VB.NET & Interfacing with office97 - Database programming with ADO.NET – Overview of ADO, from ADO to ADO.NET, Accessing Data using Server Explorer. Creating Connection, Command, Data Adapter and Data Set with OLEDB and SQLDB. Display Data on data bound controls, display data on data grid.

Unit -V

Case Studies

References

Evangelos Petroustos, Mastering VB.NET

Skill Based Elective- VI

(Semester - VI)

J2EE

Unit- I

Introduction

Introduction to J2EE - Components overview - Architecture - Advantages of J2EE - Introduction to JSP, Servlets and EJB

Unit -II

Servlets & Java Mail

Purpose and use of servlets - Servlet Environment - Servlet Hierarchy - Simple Servlet Example - Passing parameter Data to a Servlet - Web applications - Handling Errors - Servlet Filtering - Event Listening - Servlet Threads - Security and Servlet Sand Box - Introduction to Java Mail API - Setting up the J Mail Environment - Sending & Receiving mails

Unit- III

JSP

Syntax and structure of JSP - First JSP Example - JSP Life Cycle - JSP Derivatives - Accessing - HTTP Servlet Variables - Expression Language (EL) - simplifying JSP pages using Beans - Role of JSP Standard Tag Library (JSTL) - Iterative Tags - Cooperating tags

Unit- IV

EJB

Introduction to EJB - Session Beans & Entity Beans - Specifying a stateless Session Bean - Implementing a session Bean - Configuring Session Beans - Stateful session Beans - Timer - Specifying a Entity Bean - Implementing a Entity Bean - Configuring Entity Bean - Deploying Entity Bean - EJB Query Language - Container Manager Relationships - EJB QL - Applications of EJB - Security Features in EJB.

Unit -V

Integrating XML with J2EE

Origins of XML - Structure & Syntax of XML - Creating valid XML - J2EE support for XML - The JAXP Package - Passing XML using SAX - Java Architecture for XML Binding.

References

Martin Bond, Dan Haywood & Andy Longshaw, **Sams Teach Yourself J2EE in 21 Days**, 2006