PGDCA – II Year

PT. SUNDARLAL SHARMA (OPEN) UNIVERSITY CHHATTISGARH

POST GRADUATE DIPLOMA IN COMPUTER APPLICATION

SYLLABUS

COURSE VI: GUI Programming in Visual Basic

Block – I

Unit – I: Introduction to Visual Basic

What is Visual Basic, Visual Basic edition, Minimum requirements to run Visual Basic on a computer, Features of Visual Basic, Integrated Development Environment, Toolbar, Menu Bar, Tool Box, Project Explorer Window, Properties Window, Form Layout Window, Form Designer Multiple Forms, Context Menu, Toolbar Shortcut Menu Object Box, Property List Tabs, Description Pane, Object Browser, Code Editor Window, Debugging Window, Immediate Window, Watches Window Locals Window, Creating Your First Visual Basic Project, Saving the Project, Points to remember, practice questions.

Unit – II: Work on the form

Introduction, properties of form, Loading or unloading forms, Displaying and hiding the form, Hiding Forms, Startup Forms, mouse events, mouse up event, mouse down event, Using Mouse Down with the Move Process, Using Mouse Down with Line Method, mouse move event, Using mouse movement with the line method, How does mouse move work?, keyboard events, points to remember, practice questions.

Unit – III: Data Types in Visual Basic

Introduction, variable, data types, declaring variables, Type declaration, Naming of variables, Naming conventions, Constant, Arrays, Declaring array, Set boundaries, Array types, Deterministic or Motion array, Dynamic array, Multi-Dimensional array, Collection, processes, Sub-process, General procedures, Event procedures, Logic, Argument passing mechanism-Passing Argument by Reference, Passing Argument by Value, Function Return Value, Function Returning Data Type, Function Returning Array, points to remember, practice questions.

Unit – IV: Control Flow Statement

Introduction, Conditional Operator, Control Structures-If -Then, If –Then- Else, Multiple If...Else...If Statements, Select Case, Loop Statements, Do Loop, For Next, While Wend, Nested Control Structure, Exit Statement, Points to remember, practice questions.

Block – II

Unit – V: Basic Active X Controls:

Introduction, Text box controller, Basic Properties, List Box Controller, Adding Items to a Simple List Box, Adding an Item to a Particular Position, Removing an Item from a Sorted List, Creating a Multi Column List Box, Combo Box Controller, Scroll Bar, Scroll Bar Controller, Scroll Bar Controller, Events Slider Control, Adding a Slider Control to a Tool Box, Tick style and Tick Frequency, Min and Max properties, Small change and Large change, Flat scrollbar controls, Adding a flat scrollbar to a form, Setting the Min and Max properties at design time or run time, Setting small change and large change properties, Displaying different interface styles using flat scrollbars, Disabling scroll arrows in response to scroll bar movement, File Control, Timer Control, Creating a Simple Timer Application, Points to remember, practice questions.

Unit – VI: Advanced Active X Control:

Introduction, Common Dialogs Control, Adding a Common Dialog Box Control, Properties of a Common Dialog Box, Cancel Error, Dialog Title, Flags, Min and Max Color Dialog Box, Font Dialog Box, File Open Dialog Box, File Save Dialog Box, Properties of Open and Save dialog boxes, Using flags for file open and file save common dialog boxes, Print Dialog Box, Properties, Help Dialog Box, Tree view control, Setting the node object property, Node Relationships and References to Relative Nodes, Adding a node object to a node collection, Image List Control, Managing List image Objects and List images Collections, Adding list image objects at design time, Adding List Image Objects at Run Time Determining Image Size, Methods that help you create composite images List View control Four different types of views Changing views from the Overview View property Two images List control for icons and small icons Column Headers are displayed in the Report View Column text is displayed in the List Sub Item Keep with the collection of all items, depending on the presence of column headers Memorable points, practice questions.

Block – III

Unit – VII: Menu

Introduction, menu editor, Adding menus and sub-menus to forms, Accelerator or access key, Creating Separator bar on menu list, Shortcut key to display a check mark on a menu, pop-up menus, Points to remember, practice questions.

Unit – VIII: Graphics

Introduction, graphics controller, Adding graphics to a form, Picture box and image box controls, Loading a picture into a picture box control, images size, Image Box Control Controller, Picture box control, Drawing Control, Draw lines, Draw shapes, Graphics Methods, Benefits of Graphics Methods, Limitations of graphics methods, Coordinate System, Twips, Drawing circles, Drawing

ellipses, Drawing arcs, Lines and Shapes, Draw lines, Draw text, Text Width Method, Text Height Method, Filling shapes, Fill style property, Settings, Fill Style property example, FillColor property, Settings, Remark, Fill Color property example, Grid controller, Preparing for Grid Control, Understanding the Use of Grid Control, Memorable points, practice questions.

Unit – IX: Multiple Document Interface

Introduction, Single document interface, Multiple Document Interface, Creating an MDI Application, Features of MDI, Working with MDI forms and child forms, Determining the active child form or control, Loading MDI Forms and Child Forms, Determining the size and position, of the Child form, Saving information for a child form, Deleting MDI Forms with Query, Creating a Simple Application, Memorable points, practice questions.

Unit – X: Error Handling

Introduction, Understanding Errors, Scanning Errors, Compile Time Error Reports, Runtime Error Reports, Identifying syntax errors, identifying logical errors, trapping run-time errors, VBA's error-handling hierarchy, Debugging like the pros, VBA debugging tools, Immediate window, Breakpoint, Call stack, Watch window, Displaying the Add Watch Window, Adding an expression to the Watch Window, Modifying or Deleting a watch expression, Winning Strategy for Quick Watch Window, Local Window, Bugs Free Code, Memorable points, practice questions.

Block – IV

Unit – XI: Database Programming with Visual Basic

Introduction, Designing a Database, Objective of Database Design, Visualizing/organizing data, Tables, Visual data managers, Creating Database File, What is Data Controller, Adding a Data Controller to a Form, Selecting Data Control Properties, Database, Selecting a Recordset, What are Bound Controllers?, What do these controllers do?, Adding Bound Controls to a Form, Using Bound Controls to Display Data, Setting the Data Source Property, What is a Data Access Object?, Adding DAO to your project, working with ODBC, What are ODBC Drivers?, Setting up an ODBC Data Source, Access ODBC Drivers, Making ODBC Source , Adding ActiveX Data Object, Data Connection Method, ADO to Project, Setting up a Data Source, What is ADO Data Control?, Add and set properties of an ADO data control, Memorable points, practice questions.

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COURSE VII: Internet and Web Development

Block I

UNIT-I COMPUTER NETWORKS

Computer Networks, Local Area Networks, Wide Area Networks, Metropolitan Area Network, Network Devices, Client/Server Network Domain Name System, Internet Vs Intranet.

UNIT-II INTRODUCTION TO INTERNET

Introduction, What is Internet Actually, Owner of the Internet, Internet Service Provider, Anatomy of Internet, Arpanet and Internet, History of World Wide Web, Services Available on Internet, Basic Internet Terminologies, Net Etiquette, Applications of Internet, Commerce on the Internet, Governance on/Through the Internet, Impact of Internet on Society, Exercise.

UNIT-III INTERNET CONNECTIVITY

Connectivity Types, Modem, Broadband-DSL, Software Requirements, Modem Configuration, World Wide Web and your telephone, Integrated Services Digital Network Connection (ISDN).

UNIT-IV INTERNET TECHNOLOGY AND PROTOCOLS

Introduction, Switching Technology, Internet Protocol, Overview of TCP/IP Reference Model, Introduction to TCP/IP, Overview of TCP/IP Architecture, Description of TCP/IP Model, Hybrid Reference Model, Router, Internet Addressing Scheme, Internet Protocol, IP Packet Format, IP Addressing, Internet Protocols, Application-Layer Protocols, URL.

Block II

UNIT-V: INTERNET SERVICES (DEFINITION AND FUNCTIONS)

Introduction, File Transfer Protocol, FTP-related terminologies, FTP Server and Authentication, Public and Private Software Services, FTP Clients, Types of FTP Client Software, Using Linemode FTP Client, Displaying Files, GUI FTP Client,

Using Browser-based FTP Clients, Remote Login, How does Remote Login Work, Connection to a Remote Host, MSN Messenger, Search Engine.

UNIT-VI: ELECTRONIC MAIL

Introduction, What is an E-mail, E-mail Network & Servers, E-mail Protocols, MIME, E-mail Clients, Web-based E-mails, Working with Yahoo, Reading mail, Responding to a Message, Attaching Files, Creating Address, Signing up a New Account, Signature, What is Spam.

UNIT-VI: ELECTRONIC MAIL

Introduction, What is an E-mail, E-mail Network & Servers, E-mail Protocols, MIME, E-mail Clients, Web-based E-mails, Working with Yahoo, Reading mail, Responding to a Message, Attaching Files, Creating Address, Signing up a New Account, Signature, What is Spam.

UNIT-VII WORLD WIDE WEB

Introduction, Evolution of the www, Search and metasearch, Searching the Web, Using a Directory, Using a key-work, Using Advance search options, Hyper Text Transfer Protocol, Web Server.

UNIT-VIII: BROWSERS

Introduction, WWW Web Browsers, Internet Explorer Browser, Mozilla Firefox Browser, Netscape Navigator, Opera Browser, Apple Safari Browser, Google Chrome, Favourites, History, Customizing Internet Explorer, Cookies, What is cash selling, Internet Explorer Menu-bar. Chrome, Favourites, History, Customizing Internet Explorer, Cookies, What is cash selling, Internet Explorer Menu-bar.

Block III

UNIT-IX: HYPER TEXT MARKUP LANGUAGE

Introduction, HTML Editors, Elements of HTML, HTML Writing HTML Document, HTML, HTML Text, Definition List, Compact attribute, Preformatted Text, Using Links, Changing the font colour, Table, Using Frames, HTML Rules, Introduction to Multimedia, Audio on the Web, Audio Support in HTML, Animation.

UNIT-X: WEB PUBLISHING

Introduction, Standard Generalized Markup Language (SGML), What is the need of a Website, Types of Website, Components of a web Publishing, Domain Name Planning and Registration, Web hosting, Web Design & Development, Promotion of the Site, HTML Editor, Image Editor, Uploading Web Pages using CUTEFTP, Web Casting, CGI (Common Gateway Interface), Document Interchange Standard.

UNIT-XI: INTRODUCTION TO JAVASCRIPT

Introduction, Features of JavaScript, Advantages of JavaScript, Use of JavaScript, JavaScript Syntax, Commands in JavaScript, JavaScript Variables, JavaScript Operators, Special Operators, Control Statements in JavaScript, Selection/Conditional Statements, Looping Statements, Jump Statements, Arrays in JavaScript, Functions in JavaScript, Events in JavaScript, Dialog Boxes in JavaScript, JavaScript Objects, Document Object Model (DOM).

Block IV

UNIT-XII: ELECTRONIC COMMERCE/E-COMMERCE

Introduction, Electronic Commerce, Internet & E-commerce, Technical & Organizational aspects of E-commerce, Benefits of E-commerce, Drawbaks E-commerce, Important as ports Related to E-commerce, Types of E-commerce, Difference between E-commerce & E-business, Goals of E-commerce, Components of E-commerce, E-commerce Business Models.

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Course VIII: Object oriented programming in C++

Block I

Unit I: Overview of C++:

Introduction to C++, Procedural (Structured) Oriented vs Object-Oriented Programming Paradigm, Programming Paradigm), Basic Concepts of OOP, Advantages/Benefits of OOP, Applications of OOP (Usages/Applications of OOP).

Unit II: C++ Environment:

Program Development Environment, Programming languages and C++ language standards, Programming Language and the C++ language Standard), Introduction to Various C++ Compilers, The C++ Standard Libraries, Prototype of main() Functions, Data Types.

Unit III: Creating and Compiling C++ Programs:

Turbo C++ Integrated Development Environment (Turbo C++ IDE), Edit, Compile and run C++ programs using an IDE and from the command line, (Creating, Compiling and Executing a C++ Programming IDE & through the Command line), Elements of C++ Languages, Structure of C++ Program, C++ Tokens, Keywords: Identifiers, Constants, Operators, Type Conversion in Expressions.

Block II

Unit IV: Decision Making and Branching:

Introduction, Sequential Statements, Mathematical Functions, Branching Statements, Looping Statements, Nested Loop, Programming Examples.

Unit V: Arrays and Function:

Arrays, The meaning of an Array, Single Dimensional Array, Two-Dimensional Array (Multi-Dimensional Array), User Defined Functions, Elements of user-defined functions, Return Values and their Values, Function Calls, Categories of Functions, Passing Parameters to Functions, Recursion, Command-line Parameters.

Block III

Unit VI: Classes and Objects:

Classes, Friend Functions, Friend Classes, Inline Functions, Scope Resolution Operator, Static Class Members, Static Data Members, Static Member Functions, Passing Objects to Functions, Returning Objects, Objects Assignment.

Unit VII: Array, Pointers, References, and the Dynamic Allocation Operators:

Array of Objects, Pointers to Objects, Type Checking in C++, The *this* Pointer, Pointer to Derived Type, Pointer to Class Members, Reference, Dynamic Allocation Operators of C++, C++'s Dynamic Allocation Operators.

Unit VIII: Constructors and Destructors:

Introduction, Constructors, Default Constructors, Parameterized Constructors, Copy Constructors, Multiple Constructors in a Class, Constructors with Default Arguments, Default Arguments, Special Characteristics of Constructor-Functions, Destructors.

Unit IX: Function and Operator Overloading:

Function Overloading, Constructor Overloading, Finding the Address of an Overloaded Function, Operator Overloading, *Creating a Member Operator Function:* Prefixes of increment (++) and decrement (--) operators, Creating its postfix forms (overloading the unary operator), Creating a prefix form of the increment operator (++), Creating the postfix form of the increment operator (++), Creating the prefix form of the decrement operator (-), Creating a postfix form of the decrement operator (--), Overloading shorthand operators (e.g., =, ==, etc.), Limitations of operator overloading, Operator overloading using friend function, Overloading the *New* and *Delete* Operators, Overloading some key operators, Overloading the I/O Operator.

Block IV

Unit X: Inheritance:

Introduction, Features or Advantages of Inheritance, Types of Inheritance, Base Classes and Derived Classes, Base Class Access Control, Protected Members, Protected Base Class Inheritance, Inheriting Multiple Base Classes, Ambiguity in Multiple Base Class Inheriting, Ambiguity in Single Inheritance, Constructors, Destructors and Inheritance, Passing Parameters to Base Class Constructors, Granting Access, Virtual Base Classes.

Unit XI: Polymorphism:

Polymorphism, Types of Polymorphism, Virtual Functions and Polymorphism: Virtual Functions, Properties of Virtual Functions, Declaration of Virtual Function, Pure Virtual Functions, Early Vs Late Binding.

Unit XII: Templates and Exception Handling:

Introduction to C++ Templates, Class Template, Function Template, Exception handling, C++ Exception Handling, Throwing exceptions, Catching Exceptions, C++ Standard Exception, New exception handling.

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COURSE IX: System Analysis and Design

Block I

Unit 1: System concept and system environment:

Introduction, concept of system, System Features, elements of the system, system environment and limits, Types of systems, management information System, decision support system, expert systems.

Unit 2: System development life cycle:

Introduction, system development life cycle, Different stages of System Development life cycle, Considerations for Candidate Systems, behavioural factors, financial factors, political views, prototyping.

Unit 3: Role of systems analyst:

Introduction, Historical perspective of systems analyst, What is a system analyst, What does a systems analyst do, Who can be a systems analyst, System Analysis and Designing Ability, personal ability, Educational Background and Work Experience Career Opportunities in Systems, Analysis index.

Block II

Unit 4: System planning and preliminary testing: Introduction, system planning, Why systems planning, Tactical M.I. S. Plan, Managerial and Operational MIS Plan, Determining Information Needs of Users Strategies for Determining Information Needs, Obtaining information from existing information systems, preliminary test, Problem identification, Activities Used in Preliminary Testing.

Unit 5: Information Collection:

Introduction, nature of information, sources of information, information collection techniques, Sample documents, forms and databases already available, Research and site inspection, site observation, Questionnaire, Interview, Types of Interview, conduct interviews.

Unit 6: Structured analysis:

Introduction, What is structured analysis, Why is structured analysis needed, Charts, data flow diagrams, Logical and Physical Data Flow Diagrams, diy dictionary, Data dictionary definitions and entries, Decision table, Decision Tree, and Structured English.

Unit 7: Feasibility study:

Why feasibility study, verification of authenticity, operational feasibility, technological civilisation, Time feasibility, Economic feasibility, feasibility report.

Unit 8: Cost-Benefit Analysis:

Introduction, data analysis, classification of costs and benefits, explicit and implicit costs and benefits, Direct and indirect costs and benefits, Fixed and variable costs and profits, Categories of Cost, determining cost benefit, system proposal.

Block III

Unit 9: System Design:

Introduction, design process, Design Steps, design methods, Structured Design, functional decomposition, Module Coupling and Cohesion, prototyping, information engineering, Joint Application Development, Rapid Application Development, object provided design, development activities, Considerations in Audit, Processing Control and Data Validation, Audit Trial and Documentation Control.

Unit 10: Input, Output and Form Design:

Introduction, input design, Input Design Considerations, input device, Output Dept, VDT screen output, graphics, desktop publishing, Basic parts of the form, Gorm design, Types of forms, Layout ideas, Print the form in appropriate quantity, Automated Forms Design, performance control, File Organization and Database Design.

Unit 11: File organization and database design:

Introduction, file structure, file organization, File Organization Methods, purpose of database, data structure, type of relationships between data, Types of die structure, Entities and Attributes, Normalization, Why is normalization necessary, first normal form, second normal state, third normal state, Database Administrator Role, organizing diy activities, organizing database structure, Setting up a database management system.

Unit 12: System Testing and Quality Assurance:

Introduction, What do we test systems for?, test plan, Types of system testing, Quality Assured, Quality Assurance Goals, Quality Assurance Levels, tilt in test, Role of Data Processing Auditor, Training, elements of training, Importance and need of training, types of training, Qualities of a good training program, Documentation.

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Block IV

Unit 13: Implementation and maintenance of software:

Introduction, What is system implementation, What is system transformation, types of implementation, Transformation, conversion activities, user training, Overcoming resistance to change, Post-Implementation Review, software maintenance, Maintenance or growth?, Primary activities of maintenance process, reducing maintenance costs.

Unit 14: Hardware/Software Selection and Computer Configuration:

Introduction, supplier and type, software industry, Method of Hardware Software Selection, various stages of election, advisory role, Review after installation, software selection, Ownership, Financial matters in the election process, old computer, Computer contract, art of compromise, Strategy and Solutions, Responsibilities and treatment, hardware Software, Delivery and Acceptance, assurance, finance, responsibility of reliability.

Unit 15: System protection and disaster recovery planning:

Introduction, system security, System security is an important aspect, System Security Threats, Personal Computer and System Integrity, risk analysis, control measures, Recovery/Restart Requirement, System failure and recovery, disaster/recovery planning, Plan, Team, planning work, Ethics in systems development, Code of Ethics and Standards of Practice.