DR. VIRENDRA SWARUP INSTITUTE OF VOCATIONAL STUDIES

SYLLABUS

(POST DIPLOMA IN COMPUTER APPLICATION)

COURSE CODE: COE07

COURSE NAME: CVESD POST DIPLOMA IN COMPUTER APPLICATION

COURSE DURATION: ONE YEAR

SESSION: 2024-25

DEPARTMENT OF COMPUTER APPLICATION

DR. VIRENDRA SWARUP INSTITUTE OF VOCATIONAL STUDIES, MC ROBERT GANJ, CIVIL LINES, KANPUR (UP) 208001

Course Code	Course Name	L	T	P
		3	0	0
COE07-01	COMMUNICATION ENGLISH AND COMPUTER FUNDAMENTALS			

CO1	Inculcate Process of Communication and identify barriers in communication. Demonstrate the competency in English language through understandability and practice in four skills of language such as writing, speaking, reading and listening.
CO2	Develop skills for working in team and individually.
CO3	Inculcate soft skills and develop personality through participation in group discussion, mock interview, group and individual presentation.
CO4	Describe the usage of computers and why computers are essential components in business and society.
CO5	Understanding the concept of Computer memory and input/output devices of Computers and howit works and recognize the basic terminology used in computer programming.

Course Outcomes: At the end of the course, the student will be able to,

UNIT-1

Communication, the Process of Communication, Barriers ofCommunication, Different Types of Communication, Characteristics and Conventions ofConversation, Conversational Problems of Second/Foreign Language Users, DifferenceBetween Conversation and Other Speech Events. Speaking and Listening, Conference Calls, Vocabulary Building, Writing, Grammar and Usage, Pronunciation, Job Applications and Interviews: Reading, Curriculum Vitae, Preparing for an Interview, Listening and Speaking in the Interviews Group Discussions: Group-Discussion, Study Skills, Language Focus, Speaking.

UNIT-2

Soft Skills Practice, Personality Development, Participating in Group Discussion and JobInterviews, Time Management Presentation Skills, Leadership Skills, Assertiveness, LateralThinking, Team Work and Interpersonal Skills, Emotional Intelligence, Self-Confidence andCourage, Attitude.

UNIT-3

Presentation Design and Delivery. Monologue Dialogue,Group Discussion. Effective Communication/ Mis-Communication. Interview, Public Speech.Effective Writing, Report Writing, Resume, Circular, Notice and letter Writing.

UNIT-4

Introduction to Computer: Definition - History & Generation of Computer (From First to 5^{th}) - Applications of Computer – Advantages of Computer – Terms related to Computer - Characteristics of Computer: Speed, Storage, Versatility and Diligence – Hardware & Software. Block Diagram and Working Principle of Computer - Types of Computer: On the Basis of Working - Analog, Digital & Hybrid, On the Basis of Size - Main frame, Mini

Computer, Super Computer, Work station, Micro Computer, Desktop Computer, Laptop Computer

UNIT-5

Memory: Units, Representation, Types - Primary memory: RAM, ROM, PROM, EPROM, EEPROM, DDR Secondary memory: Hard disk, CD, DVD, Blue ray Disc, Pen Drive Magnetic tape & Zip disk – **CPU:** Components of CPU - Mother board, Hard disk, RAM, ROM, Processor, SMPS & Connecting wire - Graphics Card, Sound Card, Network Card – Modem; **Input, Output devices**: Keyboard, Mouse, Scanner, Digital Camera, Joystick, Pen drive, Monitor, Printer, Plotter – Connecting port – Serial, parallel – USB port.

Referential Books :

1. Wren and Martin -English Grammar and Composition
2. B. K. Das- an Introduction to Professional English and Soft Skills
3. Barun K. Mitra- Personality Development and Soft Skills
4. Fundamental of Computers – By P.K. Sinha
5. MS-Office 2000(For Windows) – By SteveSagman

Course Code	Course Name	L	T	P
		3	0	0
COE07-02	OPERATING SYSTEM CONCEPT USING WINDOWS AND LINUX			

CO1	Explain main components, services, types and structure of Operating Systems
CO2	Apply the various algorithms and techniques to handle the various concurrency control issues.
CO3	Compare and apply various CPU scheduling algorithms for process execution.
CO4	Identify occurrence of deadlock and describe ways to handle it.
CO5	Explain and apply various memory, I/O and disk management techniques.

UNIT-1

Introduction: Operating System Structure- Layered structure, System Components, Operating system functions, Classification of Operating systems- Batch, Interactive, Time sharing, Real Time System, Multiprocessor Systems, Multiuser Systems, Multi process Systems, Multithreaded Systems, Operating System services, Reentrant Kernels, Monolithic and Microkernel Systems.

UNIT-2

Concurrent Processes: Process Concept, Principle of Concurrency, Producer / Consumer Problem, Mutual Exclusion, Critical Section Problem, Dekker's solution, Peterson's solution, Semaphores, Test and Set operation, Classical Problem in Concurrency- Dining Philosopher Problem, Sleeping Barber Problem, Inter Process Communication models and Schemes, Process generation.

UNIT-3

CPU Scheduling: Scheduling Concepts, Performance Criteria, Process States, Process Transition Diagram, Schedulers, Process Control Block (PCB), Process address space, Process identification information, Threads and their management, Scheduling Algorithms, Multiprocessor Scheduling. Deadlock: System model, Deadlock characterization, Prevention, Avoidance and detection, Recovery from deadlock.

UNIT-4

Memory Management: Basic bare machine, Resident monitor, Multiprogramming with fixed partitions, Multiprogramming with variable partitions, Protection schemes, Paging, Segmentation, Paged segmentation, Virtual memory concepts, Demand paging, Performance of demand paging, Page replacement algorithms, Thrashing, Cache memory organization, Locality of reference.

UNIT-5

I/O Management and Disk Scheduling: I/O devices, and I/O subsystems, I/O buffering, Disk storage and disk scheduling, RAID. File System: File concept, File organization and access mechanism, File directories, and File sharing, File system implementation issues, File system protection and security.

UNIT-6

Linux - Linux introduction, basic features, advantages, installing requirement, basic architecture of Unix/Linux system, kernel, shell, Linux file system-boot block, super block, inode table, data blocks, Linux standard directories. Partitioning the hard drive for Linux, installing the Linux system, system, startup and shut-down process, init and run levels. Essential linux commands understanding shells, commands for files and directories cd, ls, cp, md, rm, mkdir, rmdir, pwd, file, more, less, creating and viewing files using cat, file comparisons – cmp&comm, view files, disk related commands, checking disk free spaces.

Referential Books :

1. Silberschatz, Galvin and Gagne, "Operating Systems Concepts",Wiley Publication.
2. Sibsankar Halder and Alex A Arvind, "Operating Systems", Pearson Education.
3. Microsoft Windows Operating System Essentials (Essentials (John Wiley)) by Tom Carpenter Publisher: Sybex
4. Linux Bible by Christopher Negus Publisher: Wiley°

Course Code	Course Name	L	T	P
		3	0	0
COE07-03	PROGRAMMING IN C & C++			

CO1	Able to understand the basic knowledge of Computer fundamental and its application in computers.
CO2	Able to understand the basic knowledge of Computer fundamental and its application in computers.
CO3	Able to design and develop various programming problems using C programming concepts.
CO4	Able to Implement advance C programming concepts like function, pointer, structure and Union
CO5	Able to understand the file handling using C Programming language.

UNIT-1

Fundamentals of C programming and Control Structures: History, Structure of a C program, C Conventions, Character Set, Identifiers, Keywords, Simple Data types, Modifiers, Variables, Constants, Operators, Operator precedence. Input and Output operation: Single character input and output, formatted input and output. Control Structures, Conditional statement and switch statement. Goto statement. Looping statement, break and continue, nested for statement.

UNIT-2

Arrays and Functions: Introduction (One and multi-dimensional), Declaration of arrays, Initialization of arrays, processing with arrays. String manipulation, declaration of string arrays, string operations. Functions: Introduction, advantages of functions, Function definition, function call, Actual and formal arguments, local and global variables, function prototypes, types of functions, recursive functions, arrays and functions.

UNIT-III

Searching and Sorting: selection sort, bubble sort, insertion sort, quick sort, merge sort Searching: linearand binary search methods, comparison of sorting and searching methods.

UNIT-IV

Structures and Pointers: Introduction to structures, Advantages of structures, accessing elements of a structure, nested structures, array of structures, functions and structures, Pointers: Introduction, pointer variable, pointer operator, pointer arithmetic, pointers and arrays, pointers and strings, array pointers, dynamic allocation.

UNIT-V

Files, Preprocessor, standard library and header files: Files: Introduction, File data type, opening and closing a file, file functions (getc, putc, getw, putw, fscanf, fprintf, fread, fwrite, fgets, fputs, feof). Preprocessor: #define, #include, #undef, Conditional compilation directives, C standard library and header files: Header files, string functions, mathematical functions, Date and Time functions

Referential Books :

1. Let us C-Yashwant Kanetkar.
2. Programming in C++-Balguruswamy

Course Code	Course Name	L	T	P
		3	0	0
COE07-04	VB & VC++			

CO1	Students will demonstrate proficiency in basic functions of MS Word and Writer, including text formatting, paragraph formatting, and document layout.
CO2	Students will be able to create, edit, and format documents effectively using MS Word and Writer, including tasks such as inserting tables, images, and headers/footers.
CO3	Students will learn advanced formatting techniques such as styles, themes, and templates in MS Word and Writer to enhance the visual appeal and consistency of documents.
CO4	Students will understand and utilize collaborative editing features in MS Word and Writer, including track changes, comments, and version control, for effective teamwork and document management.
CO5	Students will be able to organize and manage documents efficiently using features like document sections, headers/footers, bookmarks, and hyperlinks in MS Word and Writer.

Unit -1:

Introduction to Visual Basic Introduction To Graphical User Interface (GUI),Oriented, Event Driven, Visual Basic Integrated Development Environment (IDE),Editions of Visual Basic, Features and Advantage of Visual Basic ,VB Compile and Debug and the Program. Introduction to VB Control Introduction to Toolbox, Object Naming Conventions, Setting Properties, Method and Events, Working with Basic objects: Forms, Labels, Textboxes, Command Buttons, Option Buttons, Check box, Image box.

Unit-2 :

VB Programming Fundamentals Data types in VB, Variables and Declaration, Scope of variables, Operators in VB, Sub procedures and functions, Control structures: IF Else Endif, Select..Case, Do while..loop, Do..loop while, Do..loop until, For..Next, Exit For and Exit Do Statement in Visual basic. Arrays and built in Functions Fixed size and Dynamic Arrays, Data Types Conversion functions, VB Built in functions: Data and time, Format and Strong. Using Additional Controls and Control Array Working with List Boxes and Combo Boxes, Scroll Bars, Picture Boxes, the Shape Control, the Line Control, The Timer Control, Control Arrays, File List Box Control.

Unit-3:

Menu Menu Basic and Editor, Accessing Keys and Shortcut Keys, Separator bar, Pop-Up Menus, Adding and Deleting Menu Items at Runtime, Dialog boxes and Mouse Events Concept of Dialog boxes: Standard Dialog box, Custom Dialog box, Common Dialog Control. Concept of Mouse Events: Mouse Events ,MDI Forms and Flex Grid Control Concept of MDI Forms: Creating and using MDI forms, arranging the Child, forms. Concept of Flex grid Control: Adjusting the size of Controls, Adding MS-Flex Grid Control, Changing the Cell Width and Height, Entering the values in the cells of grid, Scrollbars in MS- Flex Grid.

Unit-4:

Graphics and Error Handling in VB Concept of Graphics: Fundamentals of Graphics, Graphics Controls, Graphics Methods. Concept of Error Handing: Runtime Error, Handling Runtime Error by on Error Statements, Err object, Debugging, Immediate Window.Connectivity with database

using ADODC Control Bounded Control, UN Bounded Control, ADODC Steps: Record Set, Record Pointer, Methods, Properties, Accessing and Navigation.

Unit-5:

Connectivity with database and Database Operation ADODB: Implementation, Operations using Connection string. ODBC and DSN, RDO: Steps, Properties, Methods. Search, Update And Delete Operations. Object Linking and Embedding (OLE) Linking Vs. Embedding, Auto sizing an OLE Control, OLE Container Control, Pop-UP Menus At Design Time, OLE Control At Runtime, New OLE Control At Runtime, Example of OLE using Excel Sheet.

Unit-6

Object Orientated Programming in VB Classes in Visual Basic, Instantiating an Object, Your First Class Module, The Class Initialize event, Object instantiation, Object termination, The Class Terminate Event, Creating An Object From A Class. Unit-14: Crystal Reports Sample Database, Creating a New Report: Creating a Report By Wizard, Creating Report BY Design Layout. Different Sections of Reports, To Add Report Header, To add Page Header/ Field Headers, Inserting Groups, Inserting Totals and Grand Totals, How to Connect Crystal Report to VB Application. Unit- 15: Data Files Different File Mode: Text Mode, Binary Mode, Random Mode. Sequential File Access, Binary file Access, Random File Access

Referential Books :

1. Fundamental of Computers – By P.K. Sinha
2. Computer Today- By SureshBasandra
3. Rajaraman V., “Fundamentals of Computers”, Prentice-Hall of India.
4. Norton P., “Introduction to Computers”, McGraw Hill Education.

Course Code	Course Name	L	T	P
		3	0	0
COE07-05	VB.NET , C# .NET , ASP.NET			

CO1	Students will demonstrate a solid understanding of fundamental programming concepts such as variables, data types, control structures, functions, and object-oriented programming principles.
CO2	Students will develop proficiency in programming using both VB.NET and C# languages, including syntax, data manipulation, error handling, and debugging techniques.
CO3	Students will become familiar with Integrated Development Environments (IDEs) such as Visual Studio for VB.NET, C# .NET, and ASP.NET development, including features for code editing, debugging, and project management.
CO4	Students will understand and apply object-oriented programming principles such as encapsulation, inheritance, polymorphism, and abstraction in VB.NET and C# .NET programming.
CO5	Students will learn to develop dynamic and interactive web applications using ASP.NET, including concepts such as server-side scripting, state management, web forms, and web services.

UNIT 1

Introduction The C# language, The .Net Architecture and .Net Framework, The Common Language Runtime (CLR), Microsoft Intermediate Language (MSIL) Code, Just In Time Compilers (JITers), The Framework Class Library (FCL), The Common Languages Specification (CLS), The Common Type System (CTS), Garbage Collection (GC), The .Net Framework, Working with Visual Studio.Net, Similarities and Differences between C# and C++, Java, and Visual Basic, Understanding the HELLO WORLD Application Code, Namespaces in C#, The using Keyword, The class Keyword, The Main() Method, Printing on the Console, Comments. C# Basics Data Types, Variables & Constants, Operators in C#, Arithmetic Operators, Prefix and Postfix notation, Assignment Operators, Relational Operators, Other Operators, Operators precedence, Flow Control and Conditional Statements if-else statement, switch statement, Loops in C#, for loop, do-while loop, Array in C#, foreach Loop.

UNIT 2

Object and Classes Concept of a class, Objects, Fields, Methods, Instantiating the class, Accessing the members of a class, Access modifiers, Properties, Static members of the class, Constructors, Desturctors, Overloading Constructors, Value types (out & ref keywords).

Implementing inheritance in C#, The base keyword, Protected Access Modifier, sealed keyword, Polymorphism, using the reference of the base type for referencing the objects of the child class, using methods with the same name in the base and Sub-class, Overriding the methods, the new keywords, Type casting, is and as keywords, Boxing and Un-boxing.

UNIT 3

Structures, Enumeration, Garbage Collection and Nested Classes, Abstract classes & Interfaces Defining and Instantiating Structures (struct), Using Enumeration (enum), Garbage Collection in .Net, System.GC.Collect() method, Nested Classes in C#, Abstract Classes, Interfaces. Exception handling, Delegates & Events, Multithreading Exceptions in C# and .Net, Handling Exceptions using the try-catch-finally blocks, Delegates Basics, Delegates in the .Net Framework, Passing delegates to methods, Multicast Delegates, Events and Events handling in C#, Multicast events,

Multithreading in C#, Thread Functionality, System.Threading.Thread class, using join() method,Thread Synchronization. WinForm & Controls Building the "HELLO WINFORM" Application, Adding Events Handling, Form Designer, Solution Explore, Windows Form Controls-The Button Control, Adding the Event Handlers, The Label and LinkLabel Controls, The TextBox Control, Adding the Event Handlers, The RadioButton and CheckBox Controls, The ListBox and CheckedListBox Controls, ListBox Properties, The ComboBox Control.

UNIT 4

ASP.NET Overview of ASP.NET framework, Stages in Web Forms Processing, Introduction to Server Controls, HTML Controls, Validation Controls, User control, Data Binding Controls, Configuration, Personalization, Session State, Adding controls to a web form, Buttons, Text Box , Labels, Checkbox, Radio Buttons, List Box, etc.

UNIT-5

Project Work

RECOMMENDED BOOK

1. Faraz Rasheed "Programmer Heaven C# School".
2. Stephen Walthert "ASP.NET 3.5 unleased", SAMS
3. Shibi Panikkar and Kumar Sanjeev, "C# with .NET Frame Work", Firewall Media.
4. Jeffrey Richter, "Applied Microsoft .Net Framework Programming", (Microsoft) 5. Balagurusamy, "Programming with C#", TM

Course Code	Course Name	L	T	P
COE07-06	PRACTICAL-I	0	0	3

Course Code	Course Name	L	T	P
COE07-07	PRACTICAL-II	0	0	3

Course Code	Course Name	L	T	P
COE07-08	PRACTICAL-III	0	0	3