

**CENTRE FOR DEVELOPMENT OF IMAGING TECHNOLOGY  
TECHNOLOGY EXTENSION DIVISION**

**SYLLABUS**

**DIPLOMA IN COMPUTER APPLICATION (DCA)**

**Duration: 6 Months**

**Eligibility: SSLC or Equivalent**

**SCHEME OF STUDY**

DCA 101	<a href="#">PC Software</a>
DCA 102	<a href="#">Introduction to IT</a>
DCA 103	<a href="#">Introduction to Programming</a>
DCA 104	<a href="#">RDBMS</a>
DCA 105	Lab I-PC Software and Malayalam Computing
DCA 106	Lab II-Programming in C

# PAPER I -PC SOFTWARE

## **Module - I ( 10 Hrs )**

Generation of computers, types of computers, micro, mini, main frame & super computers, applications, functional units & operation concepts.

Basic concepts, types of memories from semiconductor RAMs, Memory system Considerations, Basic concepts, sequence of operations to execute a complete instruction, hardware control and Magnetic disk systems-floppy and hard disk -concept of disk operations-characteristics of different types of disk systems-magnetic tape systems-concept of optical storage devices.

Various I/O devices-concept of video terminals-video displays-alphanumeric displays-graphic displays.

Printers & Plotters ---- Types-Specifications-Characteristics.

## **Module - II ( 10 Hrs )**

Introduction, Different Operating Systems, Loading and Quitting the Operating Systems, Important DOS Commands (Internal and External), File and Directory System Concepts in DOS.

My Computer, Recycle Bin, Internet Explorer, Network Neighborhood, My Documents.

How to create a Folder, Copying and cutting files, Renaming.

Programs, Favorites, Documents, Settings, Find, Run, Shut down, application icons

## **Module - III ( 10 Hrs )**

Documentation using MSWord & Open Office Writer

The Word workspace, Starting and quitting Word, Creating and Manipulating Various documents, Editing of proofing files, Merging documents and macros.

The open command, The New command, The Save As and Save all commands, The Close command, The Page Setup, The Print Exit command.

The Cut, Copy and Paste commands, The Undo and Repeat commands.

The View menu, The Inset menu, The Tools menu, The Table menu, The Window menu.

Spread Sheet Preparation Using MS Office & Open Office

Entering Text, Entering Values, Entering Dates and Times, Moving Around, Selecting Ranges, Using Menu, Using Tool Bar, Using Shortcut Menus, Changing entries, Copying entries, Moving Entries, Inserting and Deleting cells.

Changing Character Style, Changing Alignment, Changing Column Width.

Copying entries between work books, Moving sheets between work books, Deleting sheets, Quitting Simple calculations. Doing Arithmetic, Totaling column of values, Naming cells and Ranges.

Displaying dollars and cents, Formatting decimal places, Formatting dates, Copying style and formats.

Formulas that make decisions --- Using the IF function, Using the nested IF function, Copying formulas.

Checking Spelling, Printing Worksheets, Preview Worksheets, Setting up the pages.

Sorting data, Keeping Leading in View, Finding records, Adding and deleting Records, Filtering Records.

Plotting charts, Sizing and moving charts, Updating charts, Changing the chart type, Using chart auto format.

Creating Macros, Recording Macros, Running Macros.

### **Module - IV ( 10 Hrs )**

Database Concepts Using MS Access

Introduction to Database --- Database System Concepts, DBMS and RDBMS

Creating a database --- Sorting Data in Tables, Fields, Records, Two ways to Create a Database, Creating a Database with Database Wizard-Create Tables by using the Table Wizard, Create Tables from Scratch, Field Names-Data Types and Field Properties, Modify Tables Using Design View, Entering Data in a Data sheet, Editing Data in a Datasheet, Changing the Width of Columns and Height of Rows, Changing the Order of Columns, Setting of Primary Key

Defining Relationship --- Establish Relationship, Enforce Referential Integrity

Querying a Database ---- Constructing a Query, Creating the Query, Choose the Tables to Query, Field to Query, Entering the Query criteria, Saving the Results of a Query

Different Kinds of Queries --- Crosstab, Update, Delete, Append, Make Table

Building and Modifying Forms --- For Entering and Viewing Data, Creating a Form (Design View of Form Wizard), Use the Control Toolbox to Add Controls, Modify Format Properties (Font Style, Size, Color, Caption, etc.) of Controls, Use of Form Sections (Header, Footers and Detail), Use of Calculated Control on a Form.

### **Module - V ( 10 Hrs )**

Slide Presentation Using MS Office & Open Office

Creating Template with the Auto Content Wizard. Creating a Presentation with a Template. Creating a presentation from Scratch

Normal Slide, Outline, Slide Sorter, Slide Show, Notes, Slide Master

Controlling Transitions between slides. Animating Different Parts of a slide. Inserting a Motion Clip.--Including Sounds in slides.

Organization Chart Slide, Creating a table Slide. Creating two column Slide, Module 1: Showing A Presentation, Rehearsing/ Timing a Presentation, Designating some slides as "Hidden", Viewing Slides--Anywhere in a Slide Show.

Presenting with the help of other Office Programs Importing the text from a Word Document.--- Printing a Presentation.

# PAPER II - INTRODUCTION TO IT

Concepts of Information --- Definition of information and examples of information --- Difference between data and information with illustration --- Features of information --- Categories of information --- Level of information

Data Concepts --- Examples of data, data types --- Logical concepts of data: entities, attribute and relationships --- Physical concepts: storage and retrieval, organization of data as files

Elements of electronic data processing --- Overview of transaction processing --- Processing methodologies, Batch, On-Line and Real time processing

Scientific and Business applications --- Office automation --- Invoicing Transaction processing --- Back office systems --- Financial Accounting --- Payroll --- Geographical Information System (GIS) – features and application --- Data ware housing and Data marts – features and application

Multimedia Applications --- Education --- Entertainment --- Edutainment --- Information--Dissemination

Single user Network application concepts --- Digital Libraries --- Information kiosk --- Web page --- Video on Demand

Internet --- World Wide Web (www) - History, Working --- Web Browsers, Its functions --- Concept of Search Engines, Searching the Web --- HTTP, URLs, Web Servers, Web Protocols.

Html - Concepts of Hypertext, Versions of HTML --- Elements of HTML syntax, Head & Body Sections - --Building HTML documents --- Inserting texts, Images, Hyperlinks, Backgrounds and Color controls, Different HTML tags, Table layout and presentation, Use of font size & Attributes, List types and its tags, Use of Frames and Forms in web pages.

JavaScript --- Introduction --- Embedding JavaScript into an HTML Document --- Variables --- Literals --- Arrays --- Operators --- Using JavaScript Objects --- Functions --- If/Then Statements --- Loops --- Commenting.

PHP --- Introduction --- The Basics --- Basic Syntax --- Code Syntax

Your First Script --- Error Messages --- Statements --- Variables

Arrays --- Associative Arrays --- Operators: If, Else, Elseif Loops --- Comparison and Logical Operators : Comparison Operators, Logical Operators and Arithmetic Operators.

Introduction --- XML Format and Structure --- XML Elements --- XML Attributes --- XML Syntax 1 --- XML Syntax 2

XML Using CDATA for Dealing with HTML Tags --- Displaying XML into HTML --- XML Parser --- XML DOM --- XMLHttpRequestObject1 --- XMLHttpRequestObject2 --- XMLHttpRequestObject3 --- Create an XML File From a Database1 --- Create an XML File From a Database2 --- Save XML File on Server.

Distinguish between B2B and B2C---On-line Network and Services---E-Commerce with WWW ---- E- Commerce in Service Industries --- On-Line travel Services --- The Electronic Job market --- The Electronic real estimate market --- On-Line Stock trading --- Electronic auctions ---On-Line publishing

Approach to Safe E-Commerce – Overview ---Secure Transport protocols --- SHTTP --- SSL--- Secure Electronic Transaction (SET)

Electronic Cash Electronic payment Schemes --- Payment Processing principles--- Electronic Fund Transfer (EFT) ---Master Card/Visa secure Electronic Transaction

Reasons for Information Security ---- Attacks, Threats and Trust.

Concepts of Security ---- Basic Cryptography ---- Encryption and Decryption ---- Data Encryption

Standards ---- Authentication Applications ---- Electronic Mail Security ----Digital Signature and

Authentication Protocols ---- Digital Certificates and Certification Authority ---- Digital Envelops.

### References

1. PHP for the WorldWideWeb ---- Larry Ullman ---- Peachpit Press
2. JavaScript --- Rohit Khurana ---- A.P.H.Publishing Corporation
3. Fundamentals of Information Technology --- Alexis Leon --- Vikas Publications
4. Internet for Everyone --- Alexis Leon and Mathews Leon ---- Vikas Publishing House Pvt.Ltd.,New Delhi
5. O Level Module --- M 1.2 --- Internet and Web Page Designing ---- V.K.Jain---BPB Publications.
6. XML Pocket Reference (2nd Edition) ---- Robert Eckstein ---O' Reilly
7. Pro PHP XML and Web Services ---Robert Richards

www.cdit.org

# PAPER III – INTRODUCTION TO PROGRAMMING

Computer Basics --- Algorithms --- Flowchart --- Characteristics of Computers --- Problem-solving using Computers --- using flowchart --- What is a Program?

Functional Units of a Computer --- Input Unit, Output Unit, Arithmetic and Logic Unit, Central Processing Unit

Classification of Computers --- Palmtop PC, Laptop PC, Personal Computers (PCs), Workstations, Mainframe Computers, Supercomputers

Introduction to Programming Language --- Assembly Language --- Higher Level Programming Language

Writing a Program --- Input Statement --- Some C Program Examples --- Constants --- Scalar Variables --- Declaring Variable Names --- Defining Constants --- Arithmetic Operators and Modes of Expressions --- Integer Expressions --- Floating Point Expressions --- Operator Precedence in Expressions --- Examples

of Arithmetic Expressions --- Assignment Statements --- Defining Variables --- Arithmetic Conversion --- Assignment Expressions --- Increment and Decrement Operators --- Multiple Assignments

Relational Operators --- Compound Statement --- Conditional Statement-Implementing Loops in Programs --- The While Loop --- The for Loop --- The do while Loop-Logical Expressions and More Control Statements --- Logical Operators and Expressions --- Precedence--Rules for Logical Operators --- The Switch statement --- The Break Statement --- The Continue Statement

Arrays --- Defining and Manipulating Arrays --- Array Variable --- Syntax Rules for Arrays --- Use of Multiple Subscripts in Arrays --- Reading and Writing Multidimensional Arrays

Functions --- Defining and Using Functions --- Syntax Rules for Function Declaration --- Arrays in Functions --- Global, Local and Static Variables-Processing Character Strings --- The Character Data Type --- Manipulating Strings of Characters

Enumerated Data Type --- Creating New Data Type Names --- A Stack --- Simulation of a Stack ---Application of Stack-Structures --- Using Structures --- Use of Structures in Arrays and Arrays in Structures

Pointer Data Type and its Applications --- Pointer Data Type --- Pointers and Arrays --- Pointers and Functions

Files in C --- Creating and Storing Data in a File --- Sequential Files --- Unformatted Files --- Text Files-Lists and Trees --- List Data Structure --- Manipulation of a Linearly Linked List --- Circular and Doubly-Linked Lists --- A Doubly Linked Circular List --- Binary Trees

Recursion --- Recursive Functions --- Recursive Vs Iteration --- Some Recursive Algorithms --- Tree Traversal Algorithms-Bit Level Operations and Applications --- Bit Operators --- Some Applications of Bit Operations --- Bit Fields

## **Reference**

1. Computer Programming in C --- V. Rajaraman --- Prentice-Hall of India
2. Fundamentals of Computers --- V.Rajaraman --- Prentice-Hall of IndiaDCA

# PAPER IV - RDBMS

Introduction to database system concepts ---- Overview of Database System ---- Data Independence ----DBMS Terminology ---- Data Abstraction --- Instance ----Schemes---

DBMS Components --- DDL --- DML --- Concepts of 4GL --- Data Dictionary --- Database Models ---Relational -  
-- Network --- Hierarchical

ER Model --- ER Diagrams ---- Aggregation --- Generalization --- Cardinality

Physical storage organizations ---- Hashed and Indexed files

The relational Model ---- Relational Database Structure ---- Databases---- Tables --- Relations ----Domains ---- Attributes --- Tuples --- Primary key --- Foreign key

Relational Algebra ---- Fundamental operations ---- Select project --- Union --- Difference ----Intersection-Join ---- Functional dependencies --- Multi valued dependency --- Decomposition of relational schemes ---- Normalization 1st, 2nd and 3rd normal forms, BCNF, 4 NF and 5 NF, Typical examples, Case study.

Integrity Constrains and Advantages of DBMS Concepts ---- Domain Constraints --- Referential Integrity --- Database Anomalies --- Data base Triggers --- Transaction Concepts --- Concurrency control --- Lock based protocols--- Deadlocks --- Integrity --- Recovery Rollback ----Log based recovery

Database System Architecture and new applications --- Centralized Systems --- Client-Server Systems ---

Introduction to Oracle --- Oracle architecture --- Table spaces --- Data files --- Blocks ---- Segments ---Oracle server processor --- Users and privileges-Basic structure of SQL-DDL --- DML ---- DCL ---- SQL \*PLUS ---Creating, updating, deleting records ---Rollback, dropping tables --- Adding constraints ---SQL functions-Simple queries

Nested sub queries with SQL --- Indexing and Clustering --- Creating indexes --- Listing indexes --- SQL statement with indexes ---- Validating indexes ---- Dropping indexes ---Creating a clustered table ---Dropping clusters-Views--- Defining a View --- Granting view access to others --- Querying views --- Creating Synonyms ---Defining multiple table views with JOIN and without JOIN --- Formatting results --- Inserting, deleting and Updating data through views --- Dropping views

.Application development with ORACLE --- Overview of application tools with Oracle ---- Planning and designing databases for typical applications ----Business --- Inventory --- Production --- Marketing and distribution.

PL/SQL Programming ---- Simple formatted reports --- Cursors --- Stored procedures --- Triggers ---- - Forms and Reports in Developer 2000 ---- Sample Program using Control Structures ---Cursors ---

## References

- 1.Database Management Systems --- Alexis Leon, Mathew Leon --- Vikas Publication
- 2.Database System Concepts ---Korth,Silberschatz, and Sudarsan --- Tata McGraw Hill
- 3.Oracle – 7 --- Complete Reference --- Ivan Bayross --- BPB Publications