

**SYLLABUS  
FOR  
POST GRADUATE DIPLOMA IN COMPUTER APPLICATION  
( 1 YEAR DURATION)**



**INSTITUTE OF COOPERATIVE MANAGEMENT  
COOPERATIVE COMPLEX, LAMPHELPAT  
IMPHAL, MANIPUR  
PIN - 795004**

**SECOND SEMESTER  
DATA COMMUNICATION & NETWORK**

**Time : 35 hrs.**

<b>Outline of Syllabus:</b>		<b>Minimum number of hours</b>
1	Network Fundamentals	06
2.	Transmission Mode & Transmission Media	04
3.	Multichannel Data Communication	03
4.	Basic S/W and H/W Components of Networking	03
5.	Network Models	06
6.	Network Topologies	04
7.	Switching Concepts	03
8.	Wireless Communications	03
9.	Network Security	03

*1. Networking Fundamentals*

Data & Information , Data Communication (Characteristics & Components of Data Communication ) ,Data Representation , Data Flow (Simplex , Half Duplex , Full Duplex ) , Computer Network , Categories of a network , Protocol (Elements of a Protocol ) , Standards In Networking (Concept of Standard , Standard Organizations in field of Networking), Data and Signal (analog, digital, frequency, amplitude, wavelength, bandwidth, etc), Communication channels, Transmission of digital signal (baseband, braodband)

*2. Trasmission Mode & Transmission Media*

Transmission Modes & Types, Transmission Impairments & Types, Transmission Medium (Guided, Unguided), Fibre-Optic Communication : Optical source , Propagation in fibre , Light detector , FDDI – fibre distributed data interface

*3. Multichannel Data Communication*

Circuits, channels and concepts of Multichannelling , PCM , Frequency division multiplexing , Time division multiplexing , CODECS

*4. Basic S/W and H/W Components of Networking*

Network Interface Card , Routers , Switches, Firewall, Proxy Server, Operating Systems (Server , Client )

*5. Network Models*

Concept of Layered task, TCP/IP model, Addressing in TCP/IP, introduction to OSI reference model,

*6. Network Topologies*

What is a topolgy?, Types

*7. Swtiching Concepts*

Circuit switching, Packet switching, switching modes

*8. Wireless Communications*

Introduction to Wireless Communication , Wifi standards,

*9. Network Security*

Overview of network security, common types of attacks, security mechanisms, Intrusion Detection System, Firewalls, Information Privacy and Copyright Issues

**BOOKS RECOMMENDED FOR READING AND REFERENCE MAIN READING**

1. Michael A. Miller, Introduction to Digital and Data Communications, JAICO Publishing
2. James Martin, Telecommunications and the Computer, Prentice-Hall
3. Computer Networks, Tanenbaum, Third Edition, Prentice-Hall, India
4. CFS Study Material
5. Internet Information Sever Guide by:-Mathew Strebe & Charles Perkins
6. Windows NT Security Hand Book by:Tom Sheldon(Tata McGRAW-HILL publication)

1. U.D. Black, Data Communication and Distributed Networks, Prentice-Hall
2. James Martin Processing, Computer Networks and Distributed Processing, Prentice-Hall
3. The Wireless Application Protocol Pearson Education.

**SECOND SEMESTER  
RDBMS CONCEPTS**

**Time : 35 hrs**

Outline of Syllabus:

Minimum number of hours

1	Overview of Database Management	5
2	Database concepts and Design	5
3	Traditional Data Models	3
4	Relational Models	10
5	SQL	8
6	Introduction to distributed database	4

- 1 Overview of Database Management
  - 1.1 Data, information and knowledge
  - 1.2 Increasing use of data as a corporate resource
  - 1.3 Data processing versus data management
  - 1.4 File-oriented approach versus database-oriented approach to data management (Disadvantages of file oriented approach)
  - 1.6 Data independence
  - 1.6 Database administration role
  - 1.7 DBMS architecture
  - 1.8 Different kinds of DBMS users
  - 1.9 Importance of data dictionary
  - 1.10 Contents of data dictionary
  - 1.11 Types of database language
  - 1.12 Data models
- 2 Database Concepts and Design
  - 2.1 ANSI/SPARC 3-level architecture
    - 2.1.1 Conceptual model
    - 2.1.2 Logical model
    - 2.1.3 Physical model
  - 2.2 Entity-Relationship model as a tool for conceptual design-entities attributes and relationships
  - 2.3 ER diagram
    - 2.3.1 Strong and weak entities
    - 2.3.2 Generalization; specialization and aggregation
  - 2.4 Converting an E-R model into relational schema
  - 2.5 Normalization concepts in logical (relational) model; update anomalies
    - 2.5.1 Functional dependencies
    - 2.5.2 Multi-valued dependencies
    - 2.5.3 Join dependencies
    - 2.5.4 Normal forms (1NF, 2NF, 3NF, BCNF, 4NF, 6NF, Domain-Key Normal Form)
3. Traditional Data Models
  - 3.1 ANSI/SPARC 3-level architecture and the place of logical data models in this architecture
  - 3.2 A brief overview of the three traditional models, namely, hierarchical model, network model and relational model.
  - 3.3 Data definition and data manipulation constructs in each of the three models with examples
  - 3.4 A comparison of the three models
4. Relational models
  - 4.1 Definition of relation, properties of relational model (Codd's 12 rules or equivalent)
  - 4.2 Concept of keys : candidate key, primary key, alternate key, foreign key
  - 4.3 Fundamental integrity rules: entity integrity, referential integrity
  - 4.4 Relational algebra : select, project, cross product, different types of joins (theta join, equi-join, natural join, outer join); set operation.
5. SQL

- 5.1 SQL constructs (SELECT ... FROM...WHERE....GROUP BY..... HAVING.....ORDER BY.....)
  - 5.2 INSERT; DELETE; UPDATE
  - 5.3 VIEW definition and use
  - 5.4 Temporary tables
  - 5.5 Nested queries
  - 5.6 Correlated nested queries
6. Introduction to distributed databases, client/server , object-oriented database

### **BOOKS RECOMMENDED FOR READING AND REFERENCE**

#### **MAIN READING**

- 1. A.K. Majumdar, P. Bhattacharyya, Database Management Systems, Tata McGra-Hill, 1996
- 2. H. Korth, A.Silberschatz, Database System Concepts, McGraw-Hill (Second Edition), 1991
- 3. R. Elmasri, S. Navathe, Fundamentals of Database System, Benjamin Cummings (Second Edition),. 1994
- 4. Bipin Desai, An Introduction to Database Systems, Galgotai Publication (West Publishing), 1991
- 6 F. Mc-Fadden, J. Hoffer, Modern Database Management, Benjamin cummings (Narosa), (Fourth Edition), 1994

#### **Supplementary Reading**

- 1. Peter Rob, Carlos Coronel, Database Systems : Design, Implementation and Management, Wadsworth Publishing Company , 1993
- 2. C.J. Date, An Introduction to Database Systems, Volume I, Addison Wesley (Fifth Edition), 1994
- 3 J.D, Ullman, Principles of Database Systems. Galgotia Publishing (Second Edition), 1994
- 4 D.M. Kroenke, Database Processing : Fundamentals, Design Implementation, Prentice Hall (Fifth Edition) 1994

**COMMUNICATION SKILLS II**  
**PGDCA- 2<sup>nd</sup> Semester**

**Time : 35 hrs**

Outline of Syllabus:

		Minimum number of hours
1	Grammar Activities and Composition	5
2	Voice and Accent	10
3	Interview Skills	7
4	Team and Self Management	7
5	Organization and Communication	6

**1. GRAMMAR ACTIVITIES AND COMPOSITION**

Grammar practice,  
Common mistakes in English,  
Paragraph writing,  
Précis writing,  
Essay writing,  
Letter-formal writing,  
Business Letters,  
Application, report writing,  
Taking notes,  
Preparing minutes,  
Email drafting & fax.

**2. VOICE & ACCENT**

Introduction to phonetics – vowels & consonants sounds,  
Accent neutralization,  
Stress-syllable and word-stress, intonation,  
Idioms,  
Tongue twisters and mouth exercise.

**3. INTERVIEW SKILLS**

What is an interview ?,  
How to prepare for an interview ?,  
Resume writing, job application,  
Common HR questions,  
Mock interview,  
GD session.

**4. TEAM AND SELF MANAGEMENT**

Leadership,  
Co-ordinating skills,  
Motivation techniques,  
Values and ethics,  
Office etiquette,  
Leadership in Group,  
Development of Group,  
Time and stress management,

**5. ORGANIZATION AND COMMUNICATION**

Definition of Organization,  
Nature and Purpose of Organization,  
Effective Organization and Organizational culture,  
Communication within basic Organisation Structure,  
External Communication.

Outline of Syllabus:

		Minimum number of hours
1.	Principles of Object Oriented Programming	02
2.	Beginning with C++	02
3.	Tokens, Expressions and Control Structures	03
4.	Functions in C++	03
5.	Class and Objects	03
6.	Constructor and Destructors	03
7.	Operator Overloading and Type Conversion	05
8.	Inheritance Extending Class	03
9.	Member Classes	04
10.	Managing console I/O Operations	04
11.	Working with Files	03

**1. Principles of Object Oriented Programming :**

Software Crisis; Software Evolution , A look at procedure-oriented Programming, Object Oriented Programming Paradigm, Basic Concepts of Object-Oriented Programming, benefits of OOP, Object Oriented Languages, Applications of OOP

**2. Beginning with C++ :**

What is C++?, Applications of C++, A simple C++ program, More C++ statements, An Example with Class, Structure of C++ program, Creating the source file, compiling and Linking.

**3. Tokens, Expressions and Control Structures:**

Introduction, Token, Keywords, Identifiers, Basic Data Types, User-defined Data types, Derived Data types, Symbolic Constants, type Compatibility, declarations of variables, Dynamic Initialization of variable, Reference Variables, Operators in C++ Scope Resolution Operator, Member Dereferencing Operators, memory management Operators, manipulators, Type case Operators, Expressions and Implicit Conversations Operator Overloading , Operator precedence, Control Structures.

**4. Functions in C++**

Introduction, The Main Function, Function Prototyping, Call by reference , Inline Functions, Default Arguments, const Arguments, Function Overloading, Friend and Virtual Functions.

**5. Class and Objects:**

Introduction: C structures Revisited, Specifying a class; defining Member Functions, a C++ Program with Class, making an outside function inline, nesting of member function, private member function, array within a class, Memory allocation for a object , Static Member Functions, Array of Objects, Object as Function arguments, Friendly Functions, returning Object, const member Functions, Pointers to Members.

**6. Constructor and Destructors:**

Introduction; Constructors, Parameterized Constructor, Multiple Constructor in a Class, Constructor with Default argument, Dynamic initialization of Objects, copy constructor, dynamic constructor, constructing two dimensional arrays, Destructors.

**7. Operator Overloading and Type Conversion**

Introduction, Defining operator overloading, overloading unary operators, overloading binary operators, overloading Binary operator using friends, manipulation of strings using operators, Rules for overloading operators, type conversions.

## **8. Inheritance Extending Class :**

Introduction, defining derived class, single inheritance, making a private member inheritable, Multilevel inheritance, Multiple inheritance, Hierarchical Inheritance, Hybrid Inheritance, virtual base class, abstract classes, constructor in derived classes.

## **9. Member Classes**

Nesting of Classes, Pointer

Virtual Function and Polymorphism

Introduction, Pointers to Objects, This Pointer, Pointers to derived classes, virtual Functions, pure virtual functions

## **10. Managing console I/O Operations :**

Introduction, C++ Streams, C++ Stream Classes, Unformatted I/O operations, formatted console I/O Operations, Managing output with manipulators

## **11. Working with Files :**

Introduction, Classes for File stream Operations, Opening and Closing files, Detecting end of file, More about Open(), File modes, File pointers and their Manipulations, Sequential Input and output operations, Updating file , random access, error handling during file operations, Command line argument.

## **BOOKS RECOMMENDED FOR READING AND REFERENCE**

### **MAIN READING**

1. Object Oriented Programming in TURBO C++ , Galgotia, Robert Lafore
2. Computer Science with C++, Sumita Arora, Dhanpat Rai & Co.
3. Object Oriented Programming in C++, R. Balaguruswamy.

## Outline of Syllabus:

Minimum number of hours

1	Internet and World Wide Web	02
2	Web Browsers (Microsoft Internet Explorer, Netscape Navigator)	02
3	HTML	06
4	Macromedia Dreamweaver	04
5	DHTML	05
6	Client-side Scripting	08
7	Server-side Scripting	08

1. Internet and World Wide Web
  - 1.1 Introduction
  - 1.2 How does the Internet Functions?
    - 1.1 E-Mail
    - 1.2 World-Wide Web
    - 1.3 Accessing the internet
2. Web Browsers
  - 2.1 Browsing
  - 2.2 Microsoft Internet Explorer
  - 2.3 Netscape Navigator
3. HTML
  - 3.1 Introduction to HTML Programming
  - 3.2 Document Structure
  - 3.3 Text Formatting
  - 3.4 Web Content Organization
  - 3.5 Organizing Contents in Tables
  - 3.6 Insertion of Images
  - 3.7 Interactivity using Links
  - 3.8 Image Mapping
  - 3.9 Frames in HTML
  - 3.10 Style Sheets
4. Macromedia Dreamweaver
  - 4.1.1 HTML Assignments
5. DHTML
6. Client-side Scripting
  - Java Script
  - What is JavaScript
  - Running JavaScript
  - Placing Scripts in HTML Pages
  - Writing Comments
  - Difference Between VBScript And JavaScript
  - Variables & Literals
  - Expression and Operators
  - Statements
  - Functions
  - Pop-up Boxes
  - Miscellaneous functions
  - Objects
  - Properties
  - Methods
  - Events
  - Predefined objects
  - Event Handlers
  - Creating JavaScript Hierarchy
  - Cookies
  - Introduction
  - Construction
  - Communication
  - Saving



Retrieving

Multiple cookies.

- 7 Server-Side Scripting (Active Server Pages)
  - 7.1 What is VBScript?
  - 7.2 Variables and Control structures in VBScript
  - 7.3 Typecasting variables
  - 7.4 Formatting functions
  - 7.5 Object model
  - 7.6 Built in Functions
    - 7.6.1 Math
    - 7.6.2 Date
    - 7.6.3 String
    - 7.6.4 Other functions
  - 7.7 What is ASP?
  - 7.8 Understanding Client-Server model
  - 7.9 Creating ASP pages
    - 7.9.1 Using Visual Interdev
    - 7.9.2 Using FrontPage
  - 7.10 Objects
    - 7.10.1 Building blocks of Objects
    - 7.10.2 Properties
    - 7.10.3 Methods
    - 7.10.4 Instances
      - 7.10.4.1 Response
      - 7.10.4.2 Request
      - 7.10.4.3 Application
      - 7.10.4.4 Session
      - 7.10.4.5 Server
  - 7.11 Reading & Writing files on the Server
    - 7.11.1 Server side includes
    - 7.11.2 SSI
    - 7.11.3 Redirecting users
    - 7.11.4 Executing and transferring control to another ASP
  - 7.12 Accessing files and folders
    - 7.12.1 Debugging ASP scripts
    - 7.12.2 Handling errors
  - 7.13 Connecting to a Database
    - 7.13.1 Connection Object
      - 7.13.1.1 Using a DSN
      - 7.13.1.2 Using a DSN-less
    - 7.13.2 ADO
    - 7.13.3 Reading & Displaying a Database using SQL
      - 7.13.3.1 Inserting
      - 7.13.3.2 Updating
      - 7.13.3.3 Deleting
      - 7.13.3.4 Database basics SQL
    - 7.13.4 Validations with combination of JavaScript & ASP
  - 7.14 Cookies
    - 7.14.1 Constructing
    - 7.14.2 Calling
  - 7.15 Session Creating and implementing

*Books recommended for reading and reference*

### **Main Reading**

1. Mastering HTML (BPB Publication) & HTML Unleashed 2<sup>nd</sup> Edition (SAMS Publication)
2. Teach Yourself Dream weaver in 24 hours (SAMS Publication)
3. Macromedia Dreamweaver in 24 hours By Betsy Bruce (Techmedia Publishers)
4. Mastering Dreamweaver By : David Crowder & Rhonda Crowder

5. The ABCs of Java Script (BPB Publication)
6. Beginning ASP Databases by John Kauffman (WROX Publication)

### Supplementary Reading

1. ***Teach Yourself HTML 4 in 24 Hours (SAMS Publication)***
2. Short order Macromedia Dreamweaver By: Steven Moniz
3. Master in JAVA SCRIPT (BPB Publication) & Java Script Source Book by Gordon McCOMB (WILEY Publication)
4. ASP Unleashed (SAMS Publication)
5. ASP 3.0 Programming reference (WROX Publication)

## Practical

### Project

There will be a project undertaken by the student. The project is to be submitted to the Institute of Cooperative Management , Imphal with documentation in due course of time before completion of his PGDCA

#### 1. Salient Features of the Project

- 1.1 Will be individual effort only  
Carries 100 marks

The Institute of Cooperative Management, Imphal will arrange for an expert to conduct the viva-voce.

#### 2. Guidelines for the project

- 2.1 The project should have been carried out, during the course, over a duration of 60 hrs. Every candidate should do a project individually and no grouping is allowed.
- 2.2 The project will be carried out either under the guidance of the institute or under the guidance of experts/professionals
- 2.3 The project report should be submitted covering the aspects specified in the PROJECT PROFILE.
- 2.4 Reports in fulfillment of any other examination/context will not be entertained.
- 2.5 The Institute of Cooperative Management , Imphal will arrange for viva voce of candidate relating to the project
- 2.6 The project report should have a certificate as per the Performa given below by the candidate

#### PERFORMA FOR CERTIFICATE FOR PROJECT

This is to certify that this is a bonafide record of the project work done satisfactorily at \_\_\_\_\_ by Mr./Ms. \_\_\_\_\_ (Registration No. \_\_\_\_\_) in partial fulfillment of PGDCA examination

This report or a similar report on the topic has not been submitted for any other examination and does not form part of any other course undergone by the candidate.

Signature of Candidate  
PLACE  
DATE

SIGNATURE

Name:  
Designation :  
Name & Seal of the Institution

#### 3. Project Profile

- 3.1 MODEL - 1

- 3.1.1 Topic for the project can be any subsystem of a system software or tool or any scientific or a fairly complex algorithmic situation.
- 3.1.2 The aim of this type is to highlight the abilities of algorithmic formulation, program and data flow representation, modular programming, optimized code preparation, systematic documentation and other associated aspects of software engineering. The project can be in C or C++ Language or VB and the program code should contain at least 300 lines. The assessment would be through the project report, which should portray :
  - 3.1.2.1 programming style, structure design, minimum coupling and high cohesion. No procedure should, however, be longer than 60 to 60 lines
  - 3.1.2.2 good commenting and annotating of the code and flow of representation, such that meaningful code, with good readability and ease of maintenance, results.
  - 3.1.2.3 design specifications, depicting the methods adopted and giving a simple data dictionary, test for each data, to cover name, type and validity aspects design specifications, depicting the methods adopted and giving a simple data dictionary, test for each data, to cover name, type and validity aspects
  - 3.1.2.4 test case samples, enough in number, to adequately cover the possible chances of common errors.
  - 3.1.2.5 User Manual, in its full entity.
- 3.2 Model-2 : A typical business application
  - 3.2.1 The aim of this type is to highlight the stages involved in a typical business oriented project development, though on a miniature scale and simulated environment. The appropriate use of DBMS towards any Business Applications, along with adequate level of system analysis and structured design and deployment of specific tools/products would be the underlying activity, in preparing this project.
  - 3.2.2 The subject has to be selected from a typical business/management application. The emphasis should be on selecting a system/subsystem which shows the DBMS and system analysis aspects to a greater degree. Any small and simple business system may be selected, although candidates are advised to use their knowledge and creativity, to select typical and intelligent applications, rather than run-of-the-mill themes, such as simple pay roll calculation or Issue-Return portion of an inventory scheme etc. The evaluation stage would give due weightage for theme selection, problem analysis, fact finding techniques and initial design, which are as close to real-life Indian business situations as possible.
  - 3.2.3 The project should be carried out in any of the X base family products. The code can be generated out of 4 GL Interface, like screen builder and report generator, application generator/program code generators, or can be totally hand-coded or a combination of both. The documentation is to contain the actual steps involved in such 4 GL - generated code and, possibly, a layout of such definition screen which has been filled by the candidate, to generate the code. The source is expected to be around 600 lines.
- 3.3 Model 3 :

Project related to firmware development/networking/a specialized area of search & development

The aim of this type of project is to boost the interest of the student in addressing problems related to networking/data-communication/firmware development like interfaces, device drivers, etc. or address/implement some specific research & development type of problems/algorithms.

The project could be implemented using C or C++ or a specialized package depending on the problem. If the project is related to hardware development the stress should be on the design aspects/improvements of the existing designs.

The project document must contain the detailed justification on the need for selecting the problem, its importance, its advantages/limitations and comparison with related work etc.

4. Assessment of the Project

4.1 The assessment of the project would be through the project report, which should portray:

4.2 VIVA-VOCE OF THE PROJECT will be a part of assessment and details will be included in the instructions to candidates, issued by the Examining Authority.

- a) requirements leading to the project; those which were the result of system analysis
- b) the design aspect DBMS oriented documentation which describes the structure and organization of the database, well annotated source code, supplemental documentation, which can serve as a data analysis and data flow description
- c) a simple data dictionary of the elements, which form the structure. The number of tables/files, which make up the DBMS, should not be less than there.
- d) details about I/O screens and facilities, for on-screen querying printer oriented reports and built in housekeeping routines which, help disk management and file integrity, are to be included to a limited extent.
- e) details of acceptance tests which, should be in adequate number and should include error cases
- f) User Manual in its full entity

5. Documentation of the Project

6.1 Requirement specification : will have sections as below :

- a) Application Area :  
eg Production/ Inventory/ Finance/ Marketing/ Human Resources Management/Library/Training etc.
- b) System/Subsystem :  
eg Invoicing & Accounts Receivables, Purchase & Accounts payable Budget & Accounts with variance analysis :  
Production/Sales monitoring; Material Requirement Planning (MRP) etc.
- c) End User(s) : e.g. Finance Controller, Marketing Manager, Production Manager, Personnel Depts.
- d) Main Output required :

Type	Medium	Frequency
e.g. Reports/Statement	Printer	Annual/Monthly/Daily/Qtrly.
Responses to Queries	VDU	As and when needed
Cumulative Sales	Disk	Monthly

- e)
  - 1) Brief description of the present, if any.
  - 2) Need for review-list major deficiencies/defects in the present system
- g) User Profile : There may be several groups with different needs.
- h) Performance criteria for the proposed system eg :  
The following aspects are expected to be handled by the new system (if applicable)
  - i) Volume of transaction (Data handling)
  - ii) Control aspects
  - iii) Timeliness
  - iv) Archival

## 5.2 Data Dictionary

5.2.1 This should give a catalogue of the (Data) elements used in the system/sub system developed.

5.2.2 The following are the details required. Write NA if NOT applicable.

Data Name

Aliases, if any

Length (Size)

Type, Numeric

Alpha

Binary etc.

Is it an input or program/system generated ?

SOURCE :

Validity Criterion : (Minimum, Maximum etc.)

May also relate to other data items (interrelated) Default value, if any

Security-access rights-who can read/modify. Where used in the system.

a) Reference to Data Structure/File

b) Procedures/Modules which use

## 6.3 User Manual

Contents : Suggested Chapter

1. Installation :

1.1 Hardware Requirements

1.2 System Requirements

1.3 Installation Procedure - including security aspects like password, protection, backup, controls etc.

2. Menu choices and their actions-Screen formats

3. Error Messages

4. Output

6. Sample Case

This is equally applicable to direct candidates.

## 6. Final Project Report

6.1 The final project report may contain broadly the following sections

i) Certificate as given in Section 2.8

ii) Contents

iii) Abstract/Synopsis : (2-3 pages)

giving a brief of the problem area, its importance, need, how it has been implemented, testing/results, advantages and limitation of the system.

Chapter 1 : Introduction

- Objective of the system
- Justification and need for the system
- Advantages of the system
- Previous work or related systems, how they are used

Chapter 2 : Design of the system

- Hardware, Software requirements
- System requirements
- System specifications
- Block diagram of the system
- DFDs/Algorithm/Flow Charts etc.  
along with explanation/descriptions

Chapter 3 : Implementation & Coding

Chapter 4 : Testing & Test results : sample test data/ output screen printouts etc.  
need to be presented with description

## Chapter 6 : Results and conclusion

- Appendix :
- A. Program listings
  - B. Details about the specialized package (if any)
  - C. Details of hardware products/chip specifications (if any)
  - D. Any other background material

Outline of Syllabus:

		Minimum number of hours
1	Concept of Front-End and Back-End Tools	1
2	Introduction to Visual Basic	1
3	Programming in Visual Basic	3
4	Data types	2
5	Menus & Dialog Boxes	1
6	The File System Controls	1
7	Database Basics	2
8	Introduction to Bound Controls	2
9	<b>Data Access controls/Objects</b>	2
10	<b>SQL</b>	3
11	<b>ODBC</b>	2
12	Building Client-Server Databases	2
13	<b>Data Report</b>	2
14	Working with the Data Environment Designer (DED)	2
15	RTP Function Control	2
16	Linking a Report to your Application	2
17	Introduction to ActiveX Programming	5

1. Concept of Front-End and Back-End Tools
2. Introduction to Visual Basic
  - Working with VB
  - Starting Visual Basic
  - Drawing Shapes on a form
  - Properties & Project Window, Writing Code
2. Programming in Visual Basic
  - Terminologies used in VB
  - Data structure
  - Programming fundamentals
  - Modules & their procedures.
3. Data types
  - Variables and operators
  - Loops and Control statements
  - Arrays
  - Event programming
4. Menus & Dialog Boxes
  - Menus
  - Menu naming conventions
  - Dialog boxes
5. The File System Controls
  - Examining the file system
  - Drive list box
  - Directory list box
  - File list box
  - 6.4.1 Working with file attributes
6. Database Basics
  - Add a field
  - Using access as a programming tool
  - Accessing Database
  - Using a data control
  - Creating simple database applications
  - Recordsets
  - Programming with data control
  - Adding a specific record
  - Deleting a specific record
  - Finding a specific record



7. Introduction to Bound Controls
  - Data-bound list
  - Data-bound Combo
  - Data- bound Grid
  - Type of Controls
8. Data Access controls
  - DBList Control
  - DBCombo Control
  - DBGrid Control.
9. Data Access Objects
  - Relational Database Objects
  - Database structure
  - The Database Object
  - Creating Recordsets.
10. SQL
  - Writing Structured Query Language (SQL)
  - Multi-user Considerations
11. ODBC
  - Querying a database
  - ODBC concepts
  - ODBC and Visual Basic
12. Building Client-Server Databases
  - Remote data control
  - ActiveX Data Objects (ADO)
  - Uses of ADO control in Programming
  - Front-End Database Application
  - Executing Query in ADO
13. Data Reports
14. Working with the Data Environment Designer (DED)
15. RTPFunction Control
16. Linking a Report to your Application
17. Introduction to ActiveX Programming
  - Understanding the OLE DB/ADO Architecture
  - Record Locking in ADO
  - ADO Record-set Object to Manipulate data
    - Updating and Inserting records using the Record-set Object
  - Handling errors using the ADO Errors Collection

## **BOOKS RECOMMENDED FOR READING AND REFERENCE**

### **Main Reading**

1. Visual Basic 6 Secrets by Davis (IDG Books)
2. Visual Basic 4 Gurus (SAMS Publication) The Visual Basic 4 for Windows 96 Handbook by Cornell (TATA MCGRAW HILL)

### **Supplementary Reading**

1. Will Train, Visual Basic 6 – No Experience Required, BPB Publications, 1997
2. Nathan Gurewich and Ori Gurewich, Teach yourself Visual Basic 6.0, Techmedia, 1997