

Shri Rawatpura Sarkar University, Raipur



Examination Scheme & Syllabus

For

Diploma

In

Computer Science Engineering

Semester-III

(Effective from the session: 2022-23)

Faculty of Engineering,

Shri Rawatpura Sarkar University, Raipur



**SHRI RAWATPURA SANKAR UNIVERSITY, RAIPUR,
CHHATTISGARH**

FACULTY OF ENGINEERING

Three Years Diploma Programme

Scheme of Teaching and Examination

Diploma in Computer Science Engineering

Semester - III

Outcome Based Education (OBE) and Choice Based Credit System (CBCS)

(Effective from the Academic Year 2022-2023)

S.No.	Course Code	Course Title	Hours / Week			Credits	Maximum Marks			Sem End Exam Duration (Hrs)
			L	T	P		Continuous Evaluation	Sem End Exam	Total	
1	EDP04301	Computer Network Essentials	3	1	-	4	30	70	100	3 Hrs.
2	EDP04302	Principles of Programming –I	3	1	-	4	30	70	100	3 Hrs.
3	EDP04303	Database Management System-I	3	1	-	4	30	70	100	3 Hrs.
4	EDP04304	Digital Techniques	3	1	-	4	30	70	100	3 Hrs.
5	EDP04305	Operating System	3	1	-	4	30	70	100	3 Hrs.
6	EDP04391	Electronics Workshop	-	-	2	1	15	35	50	3 Hrs.
7	EDP04392	Principles of Programming –I Lab	-	-	2	1	15	35	50	3 Hrs.
8	EDP04393	Database Management System -I Lab	-	-	2	1	15	35	50	3 Hrs.
Total Contact hr. per week: 32			Total Credit: 23			Digital Techniques Lab			650	



SHRI RAWATPURA SARKAR UNIVERSITY, RAIPUR,

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FACULTY OF COMPUTER SCIENCE & ENGINEERING

DIPLOMA Third Semester

Course Title	COMPUTER NETWORK ESSENTIALS				
Course Code	EDP04301				
Course Credits	L	T	P	TC	
	3	1	-	4	
Prerequisites	Basic knowledge about data communication.				
Course Objectives	<ul style="list-style-type: none">Subject will enable the students to learn the basic concepts of digital communication, computer network and its applications, topologies, communication media and devices, protocols used for communication.				
Course Contents	<p>UNIT-I</p> <p>NETWORKING BASICS: - Introduction to computer networks, Network services, Basic Connectivity, File Service, File Transfer Service, application and security service, sharing of multimedia elements. Models of Network Computing: Centralized, Distributed, Collaborative Computing, Application of computer networks, Network Architecture, Feature and applications of Peer to Peer Networks, Client Server Networks, Internets and Intranets, LAN, MAN, WAN.</p> <p>UNIT-II</p> <p>DIGITAL COMMUNICATION: - Basic concepts, uses of channel, communication channels characteristics, Band Width, Attenuation, Bit rate and Baud rate, Modulators and de-modulators, Synchronous & asynchronous modulators, Serial and Parallel transmission, Analogy and digital communicators, Simplex, Half Duplex & Full Duplex Communications.</p> <p>UNIT-III</p> <p>COMMUNICATION MEDIA AND DEVICES: - Transmission Media and channels, Magnetic media, Twisted pair, Co-axial cable, Optical Fibres, Line of site Transmission, Communication satellites.</p> <p>UNIT-IV</p> <p>Bus Topology, Ring Topology, Star Topology, Mesh Topology, Tree Topology, Hybrid, OSI reference, model, Physical layer, Data Link layer, Network layer, Transport layer, Session layer, Presentation layer, Application layer.</p> <p>UNIT-V</p> <p>PROTOCOL TCP / IP Protocols, NETBEUI Protocol, IPX/SPX Protocol, IP addressing scheme, Sub netting, Media Access Method, CSMA Protocol, Persistent and Non Persistent CSMA, CSMA/ CD.</p>				

Course Outcomes	After completion of this course the students will be able to apply for TCP / IP Protocols, NETBEUI Protocol.
Text Books	<ol style="list-style-type: none"> 1. MCSE Network Essentials - Becky Kirsininkas Tata McGraw Hills Publication, N. Delhi, 1998. 2. Using Novell Netware - Bill Lawrence, Loyel S. Short - Latest Edn.
Reference Books	<ol style="list-style-type: none"> 1. Novell Netware - Tips-Tricks – Techniques - Rakesh Narang, BPB Publication, Latest Edn. 2. Introduction to data communications and networking Forouzan, Behrouz Tata M/c Graw Hill, N. Delhi, Latest Edn.



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FACULTY OF COMPUTER SCIENCE & ENGINEERING

DIPLOMA Third Semester

Course Title	PRINCIPLES OF PROGRAMING –I				
Course Code	EDP04302				
Course Credits	L	T	P	TC	
	3	1	-	4	
Prerequisites	Basic knowledge about computers programming.				
Course Objectives	1. To learn basic concepts of computer programming. 2. programming language constructs such as binding, binding times, data types and implementation, operations.				
Course Contents	<p>UNIT - I</p> <p>Introduction of Programming Languages :</p> <p>Types of Languages, Evolution of 'C' Language, Structure of a 'C' Program, 'C' Program development life cycle, Executing and Debugging a 'C' Program.</p> <p>'C' Tokens :</p> <p>Keywords and Identifiers, Operators, Constants, Variables, Data Types, Precedence of Operators, Scope and Lifetime of Variables.</p> <p>Control Statement and Expressions :</p> <p>Decision Making using if statement, Types of if ...else block, Switch case Block, GOTO statement.</p> <p>Looping :</p> <p>Concept of Loop, For loop, While loop, Do while loop, Jumping in Loop, break and continue statement.</p> <p>UNIT - II</p> <p>Arrays and String :</p> <p>Introduction of Array, One - D Array, Two - D Array, Multidimensional Array, String Concept, String Functions.</p> <p>Functions :</p> <p>Concept of Function, User defined Function, System Defined Function, Types of parameter passing in function.</p>				

Pointers :

Need of Pointers, Types of Pointers, Pointer Expression, Arrays of Pointers, Pointers and Functions.

UNIT - III**Structure and Unions :**

Need of Structure, Implementing Structure Variable, Arrays of Structure, Structure within Structure Introduction of Unions Difference between Structure and Unions.

File Handling using 'C' :

Opening and Closing File, Input / Output operations on File, Random Access to Files , Command Line Arguments.

UNIT - IV**Introduction to Object Oriented Programming :**

Concept of OOP, Features of OOP, Introduction of 'C++', Structure of 'C++' program , Executing and Debugging a 'C++' Program.

Classes & Objects :

Classes & Object Specifier, Defining data members and member functions.

Constructors and Destructor :

Concept of Constructor, Types of Constructors, Memory allocation (new and delete), Usage of destructor.

Function in 'C++' :

Call by reference, Return by reference, Function overloading and default arguments , Inline function, Static class members, Friend functions, Virtual Functions.

UNIT - V**Inheritance :**

Types of inheritance, Virtual base classes and abstract base classes, Constructor and destructor in derived class.

Operator Overloading :

Overloading Unary and Binary operators, Overloading using friend function.

Exception Handling :

Various Exception Handling classes, Implementing try and catch block, Use of throw keyword.

Course Outcomes	<p>After completion of this course the students will be able to -</p> <ol style="list-style-type: none"> 1. Knowledge of, and ability to use, language features used in current programming languages. 2. An ability to program in different language paradigms and evaluate their relative benefits. 3. An understanding of the key concepts in the implementation of common features of programming languages. 4. Explain arrays and strings and create programs using them. 5. Demonstrate how to control errors with exception handling.
Text Books	<ol style="list-style-type: none"> 1. Concepts of Programming Languages Robert. W. Sebesta 10/E, Pearson Education. 2. Programming Language Design Concepts, D. A. Watt, Wiley Dreamtech, 2007.
Reference Books	<ol style="list-style-type: none"> 1. Programming Languages, 2nd Edition, A.B. Tucker, R. E. Noonan, TMH. 2. Programming Languages, K. C. Loudon, 2nd Edition, Thomson, 2003.



SHRI RAWATPURA SARKAR UNIVERSITY, RAIPUR,

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FACULTY OF COMPUTER SCIENCE & ENGINEERING

DIPLOMA Third Semester

Course Title	DATABASE MANAGEMENT SYSTEM -I				
Course Code	EDP04303				
Course Credits	L	T	P	TC	
	3	1	-	4	
Prerequisites	Basic knowledge about Microsoft Access and Microsoft Application.				
Course Objectives	<ul style="list-style-type: none">The aim of this subject is to get broad understanding of the basic concepts of database system in particular database system.				
Course Contents	<p>UNIT - I</p> <p>INTRODUCTION: -Data, Information and knowledge, Increasing use of data as a corporate resource, Data processing versus data management, File oriented approach versus Database Oriented approach to data Management, Different kinds of DBMS users, Types of database languages.</p> <p>UNIT - II</p> <p>Sorting and indexing of database files: - Sorting & Indexing Concept, Sort Commands - Single & Multiple Key, Database Management System. What is a database system? What is database? Why database, data independence, Data models: Relational, Network & Hierarchical schema and subschema.</p> <p>Programming WithFoxpro: - Concepts of FoxPro commands file, Modify Commands. Conditioning, Branching and Looping within Program files with Do While End do, If - End if, Scan-Ends</p> <p>UNIT - III</p> <p>FUNCTIONS, MACROS AND PRINTING REPORTS: - Memory Variables, Date & Time Functions And Keyboard Macros, Memory Variables - Creation and Uses, Simple. Defining Function Keys.</p> <p>UNIT - IV</p> <p>HANDLING MULTIPLE DATA FILES AND USER DEFINE FUNCTIONS: - Handling Multiple Data Files, Concept of Multiple Database Files - Using multiple database, Relationing the database - SET RELATION, UPDATE, APPEND FROM, COPY TO, JOIN, Relation Query by Example and SQL.</p> <p>Custom Screens & User Define Functions & Other Tools: -Create Custom Screen with @, @_GET, @_EDIT, @_SAY_GET_READ, Creating Box & Lines, User Define Functions, and Custom Screen Designing.</p> <p>UNIT - V</p>				

	<p>INTRODUCTION TO MS-ACCESS: -An Overview of MS-Access, Its Features, Requirement of Hardware & Software, Primary Keys, Foreign Keys & their relations. Creating Tables and Database, Various features and Operations of a Form, Creating Forms, modifying & Editing the Forms, Creating Referential Integrity and Generating Queries, Attaching, Importing & Exporting Data / Tables from various Database and Files, Preparing Macros, Various Types of Reports and their features and utilities. Creating Crystal Reports.</p>
Course Outcomes	<p>1. After completion of this course the students will be able to apply the practical knowledge on DBMS using MS Access & SQL.</p>
Text Books	<p>1. An Introduction to Data Base System - C. J Date, Addison-wesley publication, Sixth Year of Publication. 2. Introduction to Database Management System – Navin Prakash, Tata McGraw Hill. 3. Foxpro Made Simple R.K.Taxali, BPB Publications.</p>
Reference Books	<p>1. Mastering Foxpro 2.5 BPB Publications. 2. Foxpro 2.6 for Dummies Pustak Mahal.</p>



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FACULTY OF COMPUTER SCIENCE & ENGINEERING

DIPLOMA Third Semester

Course Title	DIGITAL TECHNIQUES				
Course Code	EDP04304				
Course Credits	L	T	P	TC	
	3	1	-	4	
Prerequisites	Basic knowledge about data communication and networking.				
Course Objectives	This subject will help the students to learn facts, Concepts, principle and procedure of digital electronics. These techniques can be used for designing sequential and combinational circuits, which forms the basis of any electronic device.				
Course Contents	<p>UNIT - I</p> <p>FUNDAMENTAL CONCEPTS: - Comparison between analogy and digital signals, Different types of number system and codes used in digital computers. Logic gates and basic logic gates: Logic symbols and truth table of all gates: AND, OR, NOT, NAND, NOR, EX-OR, EX-NOR, Realization of all other gates using universal gate, Boolean algebra. Rules and laws of Boolean algebra, Demorgan's theorem. Evaluation of logic expression, algebraic reduction of Boolean.</p> <p>UNIT - II</p> <p>COMBINATIONAL LOGIC DESIGN: -Introduction to logic design, Karnaugh map representation of logical functions, Simplification of logical function using K-map, (2, 3,4 variable) Sum of products (SOP) product of Sum(POS), Don't care conditions, Design example: half adder, full adder, Half subtraction, full subtraction, BCD to seven-segment decoder (using k-map), Gray to binary code converter (using k-map), Universal Gate.</p> <p>UNIT - III</p> <p>COMBINATIONAL LOGIC DESIGN USING MSI AND LSI CIRCUITS: -Multiplexer (:1) demultiplexers (1:4), Decoder (3:8) encoder (8:3) using combinational logic design. BCD adder, using (7483). ALU (74181). Digital comparator (7485), Parity generator/checkers (74180). Code converters: BCD to binary (74184), Binary to BCD (74185A), Priority encoder: Decimal to BCD (74147), Octal to binary priority, encoder (74148) Hexadecimal to binary priority encoder using 74148 encoders. Decoder/drivers for display device: BCD to decimal decoder/driver (7447, 7448).</p> <p>UNIT - IV</p> <p>LOGIC FAMILIES: -Digital integrated circuits, its introduction. Introduction: RTL, DTL, IIL, ECL, MOS families. Propagation delay time, speed, power consumption fan-in, and fan-out. TTL and C-MOS logic families: Introduction. Analysis of open collector and tri-state logic, Input/output parameters, advantages, applications, IC-interfacing, TTL driving CMOS, CMO driving TTL.</p>				

	<p>UNIT – V</p> <p>SEQUENTIAL LOGIC CIRCUIT: -Introduction: One bit memory cell, Flip-Flop-S-R, Clocked RS, T,D, J-K, master slave ,JK Triggering of flip-flops, analysis of clocked sequential circuits, state reduction and assignment, Flip-flop excitation table, design procedures, design of counters, design with state equation. Working Principle and Truth-Table, Registers, shift registers. Working with SISO, SIPO, PISO, PIPO shift registers. Counters: Ripple counters, synchronous and asynchronous counters, timing sequences, Ring and Johnson counter, application of counters, Counter 4Bit Counter, BCD.</p>
Course Outcomes	After completion of this course the students will be able to apply for Foundation course of digital system concept.
Text Books	<ol style="list-style-type: none"> 1. Digital principles Malvino& Leach, Tata McGraw-Hill Publishing Company Ltd. New Delhi, Latest, 2000 2. Modern Digital Electronics R.P.Jain, Tata McGraw-Hill Publishing Company Ltd. New Delhi, 2nd Edition, 2000.
Reference Books	<ol style="list-style-type: none"> 1. Digital Electronics V.K. Puri, Tata McGraw-Hill Publishing Company Ltd. New Delhi, 1st Edition, 2000 2. Computer Design Latest & Digital Techniques Morris Mano, Tata McGraw-Hill's.



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FACULTY OF COMPUTER SCIENCE & ENGINEERING

DIPLOMA Third Semester

Course Title	OPERATING SYSTEM				
Course Code	EDP04305				
Course Credits	L	T	P	TC	
	3	1	-	4	
Prerequisites	To understand about the basic concepts relating to operating systems and its features.				
Course Objectives	<ol style="list-style-type: none">1. Students will learn how Operating System is Important for Computer System.2. To make aware of different types of Operating System and their services.3. To learn different process scheduling algorithms and synchronization techniques to achieve better performance of a computer system. □ To know virtual memory concepts.4. To learn secondary memory management.				
Course Contents	<p>UNIT – I</p> <p>Introduction: Role of OS: Types of OS, Batch Systems; Multiprogramming; Time Sharing; Distributed & Real time OS. Computer structure and OS: System Architecture – I/O, Storage, Processors; System components- OS Services, System Calls , System Programs; System Design, Implementation and Generation.</p> <p>UNIT – II</p> <p>Process Management: Concepts of process: Process status, Process description, Process model. Process Scheduling: Concepts, Scheduler organization, preemptive and non-preemptive scheduler strategies, scheduling algorithms: FCFS, SJN, Priority Scheduling, Round Robin Scheduling, Multiple Processor scheduling, Thread Concepts and Multiple threaded OS.</p> <p>UNIT – III</p> <p>Process Synchronization and Deadlock: Process Co-operation, Concepts of Inter-process communication, Process Synchronization, Synchronization Issues, Critical Section problem, Mutual exclusion Primitives and Algorithms, Process Synchronization with semaphores. Concepts of Deadlock, Conditions for Deadlocks, Resource Concepts & Abstractions, Deadlock Prevention, Avoidance and Recovery, Banker Algorithms for Deadlock Avoidance</p> <p>UNIT – IV</p> <p>Memory Management and File system: Paging, Segmentation and Contiguous memory allocation. Virtual Memory: Demand Paging, Page replacement and Frame Allocation policies, Thrashing. File System: Concepts, Access Method, Directory Structure, and File</p>				

	<p>System Management.</p> <p>UNIT – V</p> <p>Disk management and other issues: Disk management: Disk Structure and Scheduling. File systems, and operating system support for distributed systems. Protection and Security related issues. Case studies of contemporary operating systems.</p>
Course Outcomes	<ul style="list-style-type: none"> • Understands the different services provided by Operating System at different level. • They learn real life applications of Operating System in every field. • Understands the use of different process scheduling algorithm and synchronization techniques to avoid deadlock. • They will learn different memory management techniques like paging, segmentation and demand paging etc.
Text Books	<ol style="list-style-type: none"> 1. Operating System concepts by Silberschatz A and Peterson, J.L, PE- LPE. 2. Operating System Design & Implementation by Tanenbaum, A.S., PHI. 3. Operating system concepts Galvin by Silberschatz, John Wiley& Sons
Reference Books	<ol style="list-style-type: none"> 1. Operating System in Depth Design and Programming by Thomas Doeppner, Wiley India. 2. Operating System Concept & Design, Milenkovic M, McGraw Hill. 3. Operation System, Stalling William, Maxwell MCMillan International Editions



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FACULTY OF COMPUTER SCIENCE & ENGINEERING

DIPLOMA Third Semester

Course Title	ELECTRONICS WORKSHOP				
Course Code	EDP04391				
Course Credits	L	T	P	TC	
	-	-	2	1	
Prerequisites	Basic knowledge about data communication.				
Course Objectives	<ul style="list-style-type: none">This subject envisages developing practical skills in handling various tools, accessories, equipment used in the manufacturing and testing electronic circuits.				
Course Contents	Study of different display devices <ol style="list-style-type: none">1. Identification and use of different tools2. Accessories used in manufacturing of electronic circuits.3. Study of basic components study and use digital multimeter.4. Study of function, generator.5. Study of CRO.6. Study of different cables.7. Study of different connectors.				
Course Outcomes	After completion of this course the students will be able to apply for Foundation course of electronic system concepts.				
Text Books	1. Electronic Component and Materials S.M.Dhir, Tata Mc Graw Hills publishing company Ltd., N. Delhi. 2. Printed circuit boards design and technology W.C. Boss hart, Tata Mc Graw Hills publishing company.				
Reference Books	1. Electronics Project for Beginners A.K. Maini. 2. Novell Netware - Tips-Tricks – Techniques - Rakesh Narang, BPB Publication, Latest Edn.				



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FACULTY OF COMPUTER SCIENCE & ENGINEERING

DIPLOMA Third Semester

Course Title	PRINCIPAL OF PROGRAMMING - I LAB				
Course Code	EDP04392				
Course Credits	L	T	P	TC	
	-	-	2	1	
Prerequisites	Know the classifications of data structures, i.e., linear and non-linear understand the basic operations on linear and non-linear data structures;				
Course Objectives	<ul style="list-style-type: none">• Explain the memory representation of all types of data structures• Explain how to implement the all kinds of data structures.				
Course Contents	<p>List of Experiments:</p> <ol style="list-style-type: none">1. Write a C program to take the radius of a sphere as input and print the volume and surface area of that sphere.2. Write a C program to take a 5-digit number as input and calculate the sum of its digits.3. Write a C program to print all prime numbers between a given ranges of numbers.4. Write a C program to define a macro that can calculate the greater of two of its arguments. Use this macro to calculate the greatest of 4 integers.5. Write a C program to define a recursive function that will print the reverse of its integer argument.6. Write a Program to check whether number is prime or not.7. Write a Program to implement Constructor and Destructor..8. Write a Program to implement Function Overloading.9. Write a Program to implement Operator Overloading.10. Write a Program to implement all types of Inheritance.11. Write a Program to exchange the contents of two variables by using<ol style="list-style-type: none">(a) Call by value,(b) Call by reference.12. Write a Program to read number and to display the largest value between:<ol style="list-style-type: none">(a) Two number,(b) Three Numbers.				

Course Outcomes	<ol style="list-style-type: none"> 1. Have a comprehensive knowledge of the data structures and algorithms on which file structures and data bases are based. 2. Be able to design and analyze the time and space efficiency of the data structure. 3. Be capable to identify the appropriate data structure for given problem. 4. Have practical knowledge on the applications of data structures.
Text Books	<ol style="list-style-type: none"> 1. “Data structure using C” by Samir kumarBandyopadhyay, KashiNathDey 2. “C and Data structures” by Ashok K Kamthane Pearson Education. 3. “An Introduction to Data Structures with Application” by Tremblay & Sorenson (TMH)
Reference Books	<ol style="list-style-type: none"> 1. “Fundamentals of Data Structure” by Horowitz &Sahni (Golgolia) 2. “Data Structures using C/C++” by Rajesh Shukla, Wiley India 3. “Data Structures using C” by ISRD Group (TMH) 4. “Data Structures using C/C++” by Langsam, Augenstein&Tananbaum (PHI) 5. “Data Structures & Program Design” by Robert L Kruse (PHI)



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DIPLOMA Third Semester

Course Title	DATABASE MANAGEMENT SYSTEM-I LAB				
Course Code	EDP04393				
Course Credits	L	T	P	TC	
	-	-	2	1	
Prerequisites	Basic knowledge on MS-Access and MS – Applications.				
Course Objectives	Students will be able to understand the DDL, DML and DCL commands.				
Course Contents	<p>CSE- 216 F Database Management Systems Lab</p> <p>I. Create a database and write the programs to carry out the following operation:</p> <ol style="list-style-type: none">1.Add a record in the database2.Delete a record in the database3.Modify the record in the database4.Generate queries5.Generate the report6.List all the records of database in ascending order. <p>II Develop a menu driven project for management of database system:</p> <ol style="list-style-type: none">1. Library information system<ol style="list-style-type: none">(a)Engineering(b)MCA2. Inventory control system<ol style="list-style-type: none">(c)Computer Lab(d)College Store3. Student information system<ol style="list-style-type: none">(e)Academic(f)Finance4. Time table development system<ol style="list-style-type: none">(g)CSE, IT& MCA Departments(h)Electrical & Mechanical Departments				

Usage of S/w:

1. VB, ORACLE and/or DB2
2. VB, MSACCESS
3. ORACLE, D2K
4. VB, MS SQL SERVER 2000

Note: At least 5 to 10 more exercises to be given by the teacher concerned
CSE- 216 F Database Management Systems Lab

I. Create a database and write the programs to carry out the following operation :

1. Add a record in the database
2. Delete a record in the database
3. Modify the record in the database
4. Generate queries
5. Generate the report
6. List all the records of database in ascending order.

II Develop a menu driven project for management of database system:

1. Library information system
 - (a) Engineering
 - (b) MCA
2. Inventory control system
 - (c) Computer Lab
 - (d) College Store
3. Student information system
 - (e) Academic
 - (f) Finance
4. Time table development system
 - (g) CSE, IT & MCA Departments
 - (h) Electrical & Mechanical Departments

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CSE- 216 F Database Management Systems Lab

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Course Outcomes	After completion of this course the students will be able to apply the practical knowledge on SQL.
Text Books	<ol style="list-style-type: none"> 1. An Introduction to Data Base System - C. J Date, Addison-wesley publication, Sixth Year of Publication. 2. Introduction to Database Management System - Navin Prakash, Tata McGraw Hill. 3. Foxpro Made Simple R.K.Taxali, BPB Publications.

**Reference
Books**

1. Mastering Foxpro 2.5 BPB Publications.
2. Foxpro 2.6 for Dummies Pustak Mahal.