4.1 DATA STRUCTURES USING C

L T P
4 - 6

RATIONALE

Data structures are the techniques of designing the basic algorithms for real-life projects. Understanding of data structures is essential and this facilitates the understanding of the language. The practice and assimilation of data structure techniques is essential for programming. The knowledge of 'C' language and data structures will be reinforced by practical exercises during the course of study. The course will help students to develop the capability of selecting a particular data structure.

LEARNING OUTCOMES

After undergoing the subject, the students will be able to:

- Identify the problem and formulate an algorithm for it.
- Identify the best data structures to solve the problem
- Store data, process data using appropriate data structures
- Sort the data in ascending or descending order.
- Implement trees and various traversing techniques.
- Implement various searching and sorting algorithms and to compare them for checking efficiency.

DETAILED CONTENTS

1. Fundamental Notations   (08 Periods)

    1.1 Problem solving concept top down and bottom up design, structured programming
    1.2 Concept of data types, variables and constants
    1.3 Concept of pointer variables and constants
2. Arrays   (10Periods)

    2.1 Concept of Arrays
    2.2 Storage representation of multi-dimensional arrays.
    2.3 Operations on arrays with Algorithms (searching, traversing, inserting, deleting)

3. Linked Lists   (12 Periods)

    3.1 Introduction to linked list
    3.2 Representation of linked lists in Memory
    3.3 Operations on linked list (Insertion, deletion and traversals)
    3.4 Application of linked lists
    3.5 Doubly linked lists
    3.6 Operations on doubly linked lists (Insertion, deletion and traversals)

4.   Stacks, Queues and Recursion   (12 Periods)

        4.1   Introduction to stacks
        4.2   Representation of stacks
        4.3   Implementation of stacks
        4.4   Applications of stacks
        4.5   Introduction to queues
        4.6   Implementation of queues
        4.7   Circular Queues
        4.8   De-queues
        4.9   Application of Queues
        4.10   Recursion

5.   Trees   (10 Periods)

        5.1   Concept of Trees
        5.2   Representation of Binary tree in memory
        5.3   Traversing Binary Trees (Pre order, Post order and In order)
        5.4   Searching, inserting and deleting binary search trees
        5.5   Introduction to Heap

6.   Sorting and Searching   (12 Periods)

        6.1   Introduction to sorting and searching
        6.2   Search algorithm (Linear and Binary)
        6.3   Sorting algorithms (Bubble Sort, Insertion Sort, Quick Sort, Selection Sort, Merge Sort, Heap Sort

LIST OF PRACTICALS
Write programmes in C to implement
1.   Sorting an array
2.   The addition of two matrices using functions
3.   The multiplication of two matrices
4.   Push and pop operation in stack
5.   Inserting and deleting elements in queue
6.   Inserting and deleting elements in circular queue
7.   Insertion and deletion of elements in linked list
8.   Insertion and deletion of elements in doubly linked list
9.   The Factorial of a given number with recursion and without recursion
10.   Fibonacii series with recursion and without recursion
11.   Program for binary search tree operation
12.   The selection sort technique
13.   The bubble sort technique
14.   The quick sort technique
15.   The merge sort technique
16.   The binary search procedures to search an element in a given list
17.   The linear search procedures to search an element in a given list

INSTRUCTIONAL STRATEGY

This subject clears all fundamentals of programming techniques. Teachers should stress on explaining all the techniques and algorithms in detail in theory sessions. The students should be asked to convert their ideas about a problem into an algorithm in theory class and implement it in practical class. This will help the students to have clear concepts of programming.

MEANS OF ASSESSMENT

- Assignments and quiz/class tests, mid-term and end-term written tests
- Actual laboratory and practical work, exercises and viva-voce
- Software installation, operation, development and viva-voce

RECOMMENDED BOOKS

1. Data Structure using C by Robert Kruse; Prentice Hall of India
2. Data Structure through C by Yashwant Kanekar; BPB Publications
3. Data structures – Schaum's Outline Series by Lipschutz; McGraw Hill Education Pvt Ltd , New Delhi
4. Data Structure using C by ISRD Group ; Tata McGraw Hills Education Pvt Ltd , New Delhi
5. Expert Data Structures with C by R.B. Patel ; Khanna Publishers, New Delhi.
6. Data Structures and Algorithm Using C by RS Salaria; Khanna Book Publishing Co. (P) Ltd. New Delhi
7. Data Structure through C in depth by SK Srivastava, Deepali Srivastava; BPB Publications
8. Data Structure through "C" Language by Sameeran Chattopadhyay, Matangini Chottopadhyay; BPB Publications
9. Data Structure through "C" Language by DOEACC; BPB Publications
10. Data Structure using "C" Lab Workbook by Shukla; BPB Publications
11. e-books/e-tools/relevant software to be used as recommended by AICTE/HSBTE/NITTTR.

Websites for Reference:

http://swayam.gov.in

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Periods)	Marks Allotted (%)
1	08	10
2	10	15
3	12	20
4	12	20
5	10	15
6	12	20
Total	**64**	**100**

4.2   OBJECT ORIENTED PROGRAMMING USING JAVA

L T P
4 - 6

RATIONALE

Object orientation is a new approach to understand the complexities of the real world. In contrast to the earlier approaches like procedural etc, object orientation helps to formulate the problems in a better way giving high reliability, adaptability and extensibility to the applications. The students are already familiar with this concept of programming in C which is the basic for JAVA. This course offers the modern programming language JAVA that shall help the students to implement the various concept of object orientation practically. The students will be able to programme in the object oriented technology with the usage of JAVA.

LEARNING OUTCOMES

After undergoing the subject, students will be able to:

- Explain the concepts of OOPS
- Explain and execute the language construct concepts.
- Debug and compile the program written in Java.
- Explain and implement class program.
- Explain and execute member functions.
- Describe and implement inheritance concepts.
- Explain and implement Polymorphism using Java program.
- Install Java IDE, Compiler, Java virtual machines
- Explain and implement the abstract class and interface.
- Implement the exception handling in live projects

DETAILED CONTENTS

1.   Introduction and Features   (05 Periods)

    1.1   Fundamentals of object oriented programming – procedure oriented programming Vs. object oriented programming (OOP)
    1.2   Object oriented programming concepts – Classes, object, object reference, abstraction, encapsulation, inheritance, polymorphism
    1.3   Introduction of eclipse (IDE) for developing programs in Java

2.   Language Constructs   (13 Periods)

    Review of constructs of C used in JAVA : variables, types and type declarations, data types, increment and decrement operators, relational and logical operators; if then else clause; conditional expressions, input using scanner class and output statement, loops, switch case, arrays, methods.

3.   Classes and Objects   (10 Periods)

     3.1   Creation, accessing class members
     3.2   Private Vs Public Vs Protected Vs Default
     3.3   Constructors
     3.4   Object & Object Reference

4.   Inheritance   (12 Periods)

Definition of inheritance, protected data, private data, public data, constructor chaining, order of invocation, types of inheritance, single inheritance, multilevel inheritance, hierarchical inheritance, hybrid inheritance

5.   Polymorphism   (08 Periods)

Method & constructor overloading, method overriding, up-casting and down-casting.

6.   Abstract class & Interface   (08 Periods)

Key points of Abstract class & interface, difference between an abstract class & interface, implementation of multiple inheritance through interface.

7.   Exception Handling   (08 Periods)

Definition of exception handling, implementation of keywords like try, catch, finally, throw & throws. importance of exception handling in practical implementation of live projects.

LIST OF PRACTICALS

1.   Consider we have a Class of Cars under which Santro Xing, Alto and Wagon R represents individual Objects. In this context each Car Object will have its own, Model, Year of Manufacture, Colour, Top Speed, etc. which form Properties of the Car class and the associated actions i.e., object functions like Create(), Sold(), display() form the Methods of Car Class. Use this class to create another class Company that tracks the models it create.

2.   In a software company Software Engineers, Sr. Software Engineers, Module Lead, Technical Lead, Project Lead, Project Manager, Program Manager, Directors all are the employees of the company but their work, perks, roles, responsibilities differs. Create the Employee base class would provide the common behaviors of all types of employee and also some behaviors properties that all employee must have for that company. Also include search method to search an employee by name.

3.   Suppose the Airport personals want to maintain records for the arrival and departure of the planes. Create a class Airport that has data like name, id, and address. Create two more classes for Arrival and Departure implementing Airport that will have track of planes (their name, id, arrival time or departure time and a counter to count the number of arrivals) also include the necessary methods to access the information.

        Also try to keep record of passengers by creating a new class Passenger. Also include a method search() in Airport class to search any passenger by name.

4.   Create a whole menu driven hospital management system using concept of OOP like classes, inheritance. Include information about the following:
   a. Patient -name, registration id, age, disease, etc.
   b. Staff – id, name, designation, salary, etc.

5.   Create a class called Musicians to contain three methods string ( ), wind ( ) and perc ( ). Each of these methods should initialize a string array to contain the following instruments:

   - veena, guitar, sitar, sarod and mandolin under string ( )
   - flute, clarinet saxophone, nadhaswaram and piccolo under wind ( )
   - tabla, mridangam, bangos, drums and tambour under perc ( )

   It should also display the contents of the arrays that are initialized. Create a derived class called TypeInsto contain a method called get ( ) and show ( ). The get ( ) method must display a means as follows.

   Type of instruments to be displayed:

   a. String instruments
   b. wind instruments
   c. Percussion instruments

   The show ( ) method should display the relevant detail according to our choice. The base class variables must be accessible only to its derived classes.

6.   Write three derived classes inheriting functionality of base class person (should have a member function that ask to enter name and age) and with added unique features of student, and employee, and functionality to assign, change and delete records of student and employee.

7.   Using the concept of multiple inheritance create classes: Shape, Circle, Square, Cube, Sphere, Cylinder. Your classes may only have the class variable specified in the table below and the methods Area and/or Volume to output their area and/or volume.

Class	Class Variable	Constructor	Base class
Shape	String name	Shape()	
Circle	double radius	Circle(double r, String n)	Shape
Square	double side	Square(double s, String n)	Shape
Cylinder	double height	Cylinder(double h, double r, String n)	Circle
Sphere	None	Sphere(double r, String n)	Circle
Cube	None	Cube(double s, String n)	Square

8.   Write a program to create class Person.

a. Make two classes, Student and Instructor, inherit from Person. A person has a name and year of birth.
b. A student has a major, student id.
c. An instructor has salary, subject.

Write the class definitions, the constructors, set methods, get methods and for all classes.

9.   Old MacDonald had a farm and several types of animals. Every animal shared certain characteristics: they had a type (such as cow, chick or pig) and each made a sound (moo, cluck or oink). An Interface defines those things required to be an animal on the farm. Define new classes for the Old MacDonald that implement the Animal and Farm class. Create array of object of animal to define the different types of animal in the farm. Also create appropriate methods to get and set the properties.

10.   Write a program with Student as abstract class and create derive classes Engineering, Medicine and Science from base class Student. Create the objects of the derived classes and process them and access them using array of pointer of type base class Student.

INSTRUCTIONAL STRATEGY

The subject is totally practical based. Students should be given clear idea about the basic concepts of programming. In practical session student should be asked to draw flow chart write algorithm and then write program for algorithm and run on computer. It is required that students should maintain records (files with printouts).

MEANS OF ASSESSMENT

- Assignments and quiz/class tests, mid-term and end-term written tests
- Actual laboratory and practical work, exercises and viva-voce
- Software installation, operation, development and viva-voce

RECOMMENDED BOOKS

1. Object Oriented Programming using JAVA by Sunil Bhutani & Amrendra Shara; Eagle Publishing House, Jalandhar
2. Java Programming by Sachin Malhotra; Oxford University Press, New Delhi
3. Head First Java, O-REILLY, Kathy Sierra & Bert Bates.
4. Object-Oriented programming With Java, C.Thomas Wu.
5. Advance Java Programming by Uttam K. Roy; Oxford University Press, New Delhi
6. e-books/e-tools/relevant software to be used as recommended by AICTE/HSBTE/NITTTR.

Websites for Reference:

http://swayam.gov.in

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Periods)	Marks Allotted (%)
1.	05	10
2.	13	25
3.	10	20
4.	12	18
5.	08	09
6.	08	09
7.	08	09
Total	64	100

4.3 COMPUTER   ORGANIZATION

L T P
4 - -

RATIONALE

The subject provides the students with the knowledge of detailed organization of currently available personal computers in order to understand their functioning . The students will also get familiar with Architecture of multi processor systems.

LEARNING OUTCOMES

After undergoing the subject, students will be able to :

- Use CPU, register and stack.
- Compare micro programmed and hardwired control.
- Compare RISC and CISC architecture.
- Understand memory hierarchy and memory types.
- Explain the function of BIOS.
- Illustrate multi processor systems.

DETAILED CONTENTS

1. Hardware organisation of computer system   (20 periods)

    - CPU organisation : general register organisation, stack organisation, instruction formats(three address, two address, one address, zero address and RISC instruction).
      Addressing modes: Immediate, register, direct, in direct, relative, indexed.

    - CPU Design : Microprogrammed vs hard wired control.

    - Reduced instruction set computers: CISC characteristics, RISC characteristics, and their comparison.

2. Memory organisation   (18 periods)

    - Memory Hierarchy
    - RAM and ROM chips, Memory address map, Memory connections to CPU.
    - Auxillary memory : Magnetic disks and magnetic tapes.
    - Associative memory
    - Cache memory
    - Virtual memory
    - Memory management hardware
    - Read and Write operation

3. I/O organisation   (12 periods)

    a. Basis Input output system(BIOS)
        o Function of BIOS
        o Testing and initialization
        o Configuring the system
    b. Modes of Data Transfer
        o Programmed I/O : Synchronous, asynchronous and interrupt initiated.
        o DMA data transfer

4. Architecture of multi processor systems   (14 periods)

- Forms of parallel processing
- Parallel processing and pipelines, basic characteristics of multiprocessor
- General purpose multiprocessors'
- Interconnection networks : time shared common bus, multi port memory, cross bar switch, multi stage switching networks and hyper cube structures.

INSTRUCTIONAL STRATEGY

Since the subject is theoretical one, the practical aspects should be taught along with the theory instruction. The students be given quiz tests and asked to give seminars on small topics. There is sufficient time in the subject and the students can be taken to laboratory for demonstration.

MEANS OF ASSESSMENT

- Assignments and quiz/class tests, mid-term and end-term written tests
- Viva-voce

LIST OF RECOMENEDED BOOKS

1. Computer Architecture and Organisation by Moris Mano
2. Computer Architecture by J.P.Hayes
3. Structured Computer Organisation By Tanenbaum Andrew S, PHI
4. e-books/e-tools/relevant software to be used as recommended by AICTE/HSBTE/NITTTR.

Websites for Reference:

http://swayam.gov.in

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (in periods)	Marks Allotted (%)
1.	20	32
2.	18	28
3.	12	20
4.	14	20
Total	64	100

4.4   MICROPROCESSORS AND PERIPHERAL DEVICES

L T P

4 - 3

RATIONALE

The study of microprocessors in terms of architecture, software and interfacing techniques leads to the understanding of working of CPU in a microcomputer. The development in microprocessors of 32 bit architecture brings the students face-to-face with mainframe enabling them to get employment in R&D, assembly, repair and maintenance of hardware of microprocessors and computers. Microprocessors find application in process control industry. They also form a part of the electronic switching system between source and destination in long distance telecommunications. Thus the microprocessor is an area of specialization.   Students of electronics and related engineering branches often use microprocessors to introduce programmable control in their projects, in industrial training.

LEARNING OUTCOMES

After undergoing the subject, the students will be able to:

- Describe all the internal parts and pins of 8085
- Write and Edit assembly language program using mnemonics
- Write, execute and debug assembly language programs for simple applications
- Interface various peripheral devices with microprocessor.
- Use various data transfer techniques in micro computers
- Describe the internal parts and pins of 8086

DETAILED CONTENTS

1.   Evolution of Microprocessor   (04 Periods)

Typical organization of a microcomputer system and functions of its various blocks. Microprocessor, its evolution, function and impact on modern society

2.   Architecture of a Microprocessor (With reference to 8085 microprocessor)

(12 periods)

Concept of Bus, bus organization of 8085, Functional block diagram of 8085 and function of each block, Pin details of 8085 and related signals, Demultiplexing of

address/data bus generation of read/write control signals, Steps to execute a stored programme

3. Instruction Timing and Cycles (08 periods)

Instruction cycle, machine cycle and T-states, Fetch and execute cycle.

4. Programming (with respect to 8085 microprocessor) (16 periods)

Brief idea of machine and assembly languages, Machines and Mnemonic codes. Instruction format and Addressing mode. Identification of instructions as to which addressing mode they belong. Concept of Instruction set. Explanation of the instructions of the following groups of instruction set. Data transfer group, Arithmetic Group, Logic Group, Stack, I/O and Machine Control Group. Programming exercises in assembly language. (Examples can be taken from the list of experiments).

5. Memories and I/O interfacing (10 periods)

Concept of memory mapping, partitioning of total memory space. Address decoding, concept of peripheral mapped I/O and memory mapped I/O. Interfacing of memory mapped I/O devices.

6. Interrupts (04 periods)

Concept of interrupt, Maskable and non-maskable, Edge triggered and level triggered interrupts, Software interrupt, Restart interrupts and its use, Various hardware interrupts of 8085, Servicing interrupts, extending interrupt system

7. Data Transfer Techniques (04 periods)

Concept of programmed I/O operations, sync data transfer, async data transfer (hand shaking), Interrupt driven data transfer, DMA, Serial output data, Serial input data

8. Peripheral devices (03 periods)

8255 PPI, 8253 PIT and 8257 DMA controller

9 Architecture of 8086 Microprocessor (03 periods)
 - Block diagram
 - Minimum and Maximum mode
 - Pin and Signals

LIST OF PRACTICALS

1. Familiarization of different keys of 8085 microprocessor kit and its memory map

2. Steps to enter, modify data/program and to execute a programme on 8085 kit

3. Writing and execution of ALP for addition and sub station of two 8 bit numbers

4. Writing and execution of ALP for multiplication and division of two 8 bit numbers

5. Writing and execution of ALP for arranging 10 numbers in ascending/descending order

6. Writing and execution of ALP for 0 to 9 BCD counters (up/down counter according to choice stored in memory)

7. Interfacing exercise on 8255 like LED display control

8. Interfacing exercise on 8253 programmable interval timer

9. Interfacing exercise on 8279 programmable KB/display interface like to display the hex code of key pressed on display

10. Use of 8085 emulator for hardware testing

INSTRUCTIONAL STRATEGY

The digital systems in microprocessors have significant importance in the area of electronics. Adequate competency needs to be developed by giving sufficient practical knowledge in microprocessors (programming as well as interfacing). Help may be taken in the form of charts, simulation packages to develop clear concepts of the subject. Programming exercises other than the given in the list may be given to the students.

MEANS OF ASSESSMENT

- Assignments and quiz/class tests, mid-term and end-term written tests
- Actual laboratory and practical work, exercises
- Viva-voce

RECOMMENDED BOOKS

1. Microprocessor Architecture, Programming and Applications with 8080/8085 by Ramesh S Gaonker, Willey Eastern Ltd. New Delhi

2. Introduction to Microprocessor by Mathur ,Tata McGraw Hill Education Pvt Ltd , New Delhi

3. Microprocessor and Microcontrollers by Dr BP Singh, Galgotia Publications, New Delhi

4. Microprocessor and Applications by Badri Ram: Tata McGraw Hill Education Pvt Ltd , New Delhi

5. Microprocessor and Microcomputers by Refiquzzaman, Prentice Hall of India Ltd., New Delhi.

6. Microprocessor programming & applications.by sudhir Goyal, North Publication.

7. Digital Logic and Computer Design by Mano, M Morris; Prentice Hall of India, New Delhi

8. Digital Electronics by Rajaraman; Prentice Hall of India Ltd., New Delhi

9. e-books/e-tools/relevant software to be used as recommended by AICTE/HSBTE/NITTTR.

Websites for Reference:

http://swayam.gov.in

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Periods)	Marks Allotted (%)
1.	04	05
2.	12	20
3	08	10
4	16	25
5.	10	15
6.	04	05
7.	04	05
8.	03	07
9	03	08
Total	**64**	**100**

L T P
3 - 3

RATIONALE

Database and database systems have become an essential component of everyday life in modern society.   This course will acquaint the students with the knowledge of fundamental concepts of DBMS and its application in different areas, storage, manipulation and retrieval of data using query languages.   Oracle/My SQL/SQL Server can be use as package to explain concepts.

LEARNING OUTCOMES

After undergoing the subject, the students will be able to:

- Define and describe the database
- Contrast and compile the design of database architecture
- Convert and compare the designs and differentiate between the keys
- Convert database in the form of tables
- Normalize the data
- Provide the security to the database
- Respond various queries in the SQL

DETAILED CONTENTS

1.   Introduction   (06 Periods)

Database Systems; Database and its purpose, Characteristics of the database approach, Advantages and disadvantages of database systems. Classification of DBMS Users; Actors on the scene, Database Administrators, Database Designers, End Users, System Analysts and Application Programmers, Workers behind the scene (DBMS system designers and   implementers, tool developers, operator and maintenance   personnel)

2.   Database System Concepts and Architecture   (06 Periods)

Data models, schemas, instances, data base state.   DBMS Architecture; The External level, The conceptual level, The internal level, Mappings. Data Independence; Logical data Independence, Physical data Independence. Database Languages and Interfaces; DBMS Language, DBMS Interfaces. Classification of Database Management Systems- Centralized, Distributed, parallel and object based.

3.   Data Modeling using E.R. Model (Entity Relationship Model)   (05 Periods)

Data Models Classification; File based or primitive models, traditional data models, semantic data models. Entities and Attributes, Entity types and Entity sets, Key attribute and domain of attributes, Relationship among entities, Database design with E/R model.

4.   Relational Model: (08 Periods)

Relational Model Concepts: Domain, Attributes, Tuples cardinlity, keys(Primary, Secondary, foreign, alternative keys) and Relations. Relational constraints and relational database schemes; Domain constraints, Key constraints and constraints on Null. Relational databases and relational database schemes, Entity integrity, referential integrity and foreign key. Comparison b/w E/R model and Relational model.

5.   Normalization   (08 Periods)
Trivial and non-trivial dependencies.
Non-loss decomposition and functional dependencies, First, Second and Third normal forms, Boyce/Codd normal form, denormalization

6.   Database Access and Security   (06 Periods)
Creating and using indexes, creating and using views.
Database security, process controls, database protection, grant and revoke

7.   MYSQL/SQL (Structured Query Language)   (09 Periods)

SQL* DDL (Data Definition Languages): Creating Tables, Creating a table with data from another table, Inserting values into a table, updating columns of a Table, Deleting Rows, Dropping a Table. DML (Data Manipulation Language): Database Security and Privileges, Grant and Revoke Command, Maintaining Database Objects, Commit and Rollback, various types of select commands, various types of joins, sub query, aggregate functions. Challenges of My SQL. Introduction to Big Data. Understanding Big Data with samples.

LIST OF PRACTICALS FOR DBMS
1.   Exercises on creation and modification of structure of tables.
2.   Exercises on inserting and deleting values from tables.

3.   Exercises on querying the table (using select command).

4.   Exercises on using various types of joins.

5.   Exercises on using functions provided by database package.

6.   Exercises on commands like Grant, Revoke, Commit and Rollback etc.

7.   Design of database for any application.

INSTRUCTIONAL STRATEGY

Explanation of concepts using real time examples, diagrams etc. For practical sessions books along with CDs or learning materials with specified activities are required. Various exercises and small applications should be given along with theoretical explanation of concepts.

MEANS OF ASSESSMENT

- Assignments and quiz/class tests, mid-term and end-term written tests
- Actual laboratory and practical work, exercises and viva-voce
- Software installation, operation, development and viva-voce

RECOMMENDED BOOKS

1) Fundamentals of Database Management Systems by Dr Renu Vig and Ekta Walia, - an ISTE, Publication, New Delhi
2) Database Management Systems by Arun K Majumdar and P Bhattacharya, Tata McGraw Hill Education Pvt Ltd, New Delhi
3) Introduction to DBMS by by ISRD Group, Tata McGraw Hill Education Pvt Ltd, New Delhi
4) Database Management Systems by Alexis Leon and Mathews Leon; Vikas Publishing House Pvt. Ltd., New Delhi
5) An introduction to database systems by Date C.J. Adison Wesley
6) Fundamentals of Database Systems by Elmasri/Navathe/Adison Wesley
7) SQL Unleashed by Hans Ladanyi Techmedia Publications, New Delhi
8) e-books/e-tools/relevant software to be used as recommended by AICTE/HSBTE/NITTTR.

Websites for Reference:

http://swayam.gov.in

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Periods)	Marks Allotted (%)
1	06	15
2	06	15
3	05	05
4	08	17
5	08	20
6	06	05
7	09	23
Total	**48**	**100**

4.6 SOFT SKILLS – II

L   T   P
-    -   3

RATIONALE

The present day world requires professionals who are not only well qualified and competent but also possess good communication skills. The diploma students not only need to possess subject related knowledge but also soft skills to get good jobs or to rise steadily at their work place. The objective of this subject is to prepare students for employability in job market.

LEARNING OUTCOMES

After undergoing this course, the students will be able to:

- Develop Communication Skills
- Work in a team
- Learn to resolve conflict by appropriate method
- Identify leadership traits and learn self motivation
- Follow ethics

DETAILED CONTENTS

- Concept of team building, behavior in a team
- Developing Interpersonal Relations- empathy, sympathy
- Communication skills-improving non-verbal communication
- Conflict Management
- Motivation
- Leadership
- Professional Ethics and Values
- Health, Hygiene, Cleanliness and Safety

In addition, the students must participate in the following activities to be organized in the institute

- Sports
- NCC/NSS
- Camp – Environment awareness
- Cultural Event

Note : Extension Lectures by experts may be organized. There will be no examination for this subject.