

Data Structure & Algorithms

Semester No	Code	Credit Hours
3/8	CS-250	3-1

Course Description:

This course will focus on data structures and algorithms for manipulating them. Data structures for storing

Text And Material:

1. Neil C. Jones, Pavel Pevzner, "An introduction to Bioinformatics Algorithms", The MIT Press
2. Gary Benson and Roderic Page, "Algorithms in Bioinformatics".
3. 3. R. Sedgewick, "Algorithms in C", Addison-Wesley.

Prerequisite: Fundamentals of Programming for BI

Course Learning Outcomes:

Upon successful completion of the course, the student should be able to:

1. Describe and explain the representation and use of primitive data types and built-in data structures
2. Describe and illustrate how data structures are allocated and used in memory
3. Describe and illustrate common applications for each data structure in a high-level language
4. Implement user-defined data structures in a high-level language Explain various concepts of basic chemistry.

Assessment System

Quizzes	10-15%
Assignments	5-10%
Midterms	30-40%
ESE	40-50%

Week wise Lecture Plan:

Week No	Description	Quizzes	Assignment
1	Introduction to data structures and algorithms	01	01
2 - 3	Array Based Algorithms,		
4 - 5	Uses of Arrays		
6	Concept of Binary & Linear Search	02	01
7 - 8	Stack & Queues		
9	MIDTERMS		
10 -11	Recursion Application	03	02
12 -13	Triangular Applications		
14	Factorial & Trees	04	
15 -16	Graphs & Their algorithms		03
17	Comparison of sorting techniques		
18	END SEMESTER EXAMINATION		

Lab Practical

Lab No	Description
1 - 2	Implementation of arrays
3 - 4	storing and searching data in arrays
5 - 6	Implementation of Linear Search
7 - 8	Implementation of Binary Search in Arrays
MIDTERMS	
10 -11	Using different sorting techniques
11 - 12	Implementing Stacks, Queues and priority queues
13 - 14	Determine the Heat of Neutralization of NaOH and HCL, implementation of different types of Linked Lists
15 - 16	Tree and graph algorithms

