



St. Mira's College For Girls, Pune
(S.Y.B.Sc(C.S) 2021-2024)

Computer Practical
Practical on Data Structures and Algorithms II and Computer Networks-I

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| Semester – IV | Credits: 2 | Subject Code: BSP42108 | Lectures: 48 |
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Course Outcomes:

At the end of this course, the learner will be able to:

- Illustrate different methods of organizing the large amount of data
- Summarize well-organized data structures in solving various problems
- Compare and contrast the usage of various data structures in problem solving
- Demonstrate algorithms to solve problems using appropriate data structures

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| Section 1: Data Structures and Algorithms II | 28 |
| <ul style="list-style-type: none"> ● Assignment 1 :Binary Search Tree and Traversals <ul style="list-style-type: none"> ○ Implement Binary Search Tree(BST) to perform following operations on BST–Create, Recursive Traversals-Inorder, Preorder, Postorder ○ Perform following operations: insert, delete ● Assignment 2 :Binary Search Tree Operations <ul style="list-style-type: none"> ○ Implement Binary Search Tree (BST) to perform following operations on BST–copy and mirror image of BST, counting leaf, non-leaf and total nodes. ○ Level-order traversal of binary search tree using queue. ● Assignment 3 :Applications of Binary Tree <ul style="list-style-type: none"> ○ Sort set of elements using Heap sort ○ Encode a set of characters using Huffman encoding ● Assignment 4 :Graph implementation <ul style="list-style-type: none"> ○ Implement Graph as adjacency matrix and adjacency list ○ Calculate indegree and outdegree of vertices ○ Graph traversals: BFS and DFS ● Assignment 5 :Graph Applications -I <ul style="list-style-type: none"> ○ Implementation of Topological sorting ○ Implementation of Prim's/Kruskal's Minimum spanning tree algorithm ● Assignment 6 :Graph Applications -II <ul style="list-style-type: none"> ○ Implementation of Dijkstra's shortest path algorithm for finding Shortest Path from a given source vertex using adjacency cost matrix. ○ Implementation of Floyd Warshall algorithm for all pairs shortest path. | |

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| Section 2: Networking Assignments | 8 |
| <ul style="list-style-type: none"> ● Assignment 7: Networking Assignments ● Assignment 8: Networking Assignments | |

***Contact Hours:12**

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| Recommended Books: | |
| <ul style="list-style-type: none"> ● Debasis S.(2009).<i>Classic Data Structures</i> . Prentice Hall India Pvt. Ltd. ● Horowitz E., Sahni S.,Anderson-Freed s. (2008).<i>Fundamentals of Data</i> | |

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| Board Of Studies | Name | Signature |
| Chairman (HoD) | Ms. Ashwini Kulkarni | |



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| <i>Structures in C . Universities Press.</i> | |
| ● Kamthane A.N.(2009). <i>Introduction to Data Structures in C.</i> Pearson Education. | |
| ● Wirth N. (1976). <i>Algorithms and Data Structures.</i> Pearson Education. | |

| Board Of Studies | Name | Signature(In white cell) | |
|-------------------------------|----------------------|--------------------------|--|
| Chairman (HoD) | Ms. Ashwini Kulkarni | | |
| Faculty | Ms. Alka Kalhapure | | |
| Faculty | Ms.Shubhangi Jagtap | | |
| Subject Expert (Outside SPPU) | Dr. Manisha Divate | | |
| Subject Expert (Outside SPPU) | Mr. Aniket Nagane | | |
| VC Nominee (SPPU) | Dr. Manisha Bharambe | | |
| Industry Expert | Ms. Snehal Biyala | | |
| Alumni | Ms. Mamta Choudhary | | |

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