



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

<b>Semester – IV</b>	<b>Credits: 2</b>	<b>Subject Code: BSP42108</b>	<b>Lectures: 48</b>
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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

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

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

**\*Contact Hours:12**

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

<b>Board Of Studies</b>	<b>Name</b>	<b>Signature</b>
Chairman (HoD)	Ms. Ashwini Kulkarni	



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<p><i>Structures in C . Universities Press.</i></p> <ul style="list-style-type: none"><li>● Kamthane A.N.(2009). <i>Introduction to Data Structures in C.</i>Pearson Education.</li><li>● Wirth N. (1976).<i>Algorithms and Data Structures.</i> Pearson Education.</li></ul>	
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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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