# 20CS22P1 - DESIGN AND ANALYSIS OF ALGORITHMS LABORATORY

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| Course Category: | Program Core | Credits: | 1.5 |
| Course Type: | Practical | Lecture-Tutorial-Practical: | 0-0-3 |
| Prerequisite: | Knowledge on concept of preparing algorithms for basic problems, elementary data structures and their associated operations. | Sessional Evaluation:  Univ. Exam Evaluation:  Total Marks: | 40  60  100 |
| Objectives: | * The use of different paradigms of problem solving will be used to illustrate clever and efficient ways to solve a given problem. * In addition, the analysis of the algorithm will be used to show the efficiency of the algorithm over the naive techniques. | | |

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| Course Outcomes | Upon successful completion of the course, the students will be able to: | |
| CO1 | Solve problems using machine learning techniques. |
| Course Content | 1. Implementation of Binary Search technique. 2. Implementing the following sorting techniques.    1. Merge sort b. Quick sort 3. Implementation of Optimal solution for a Knap Sack Problem using Greedy Method. 4. Implementation of minimum cost spanning tree using Prim‟s Algorithm. 5. Implementation of minimum cost spanning tree using Kruskal‟s Algorithm. 6. Implementation of Shortest path problem using Dijkstra's algorithm. 7. Implementation of All pairs shortest path problem. 8. Implementation of BFS technique. 9. Implementation of DFS technique. 10. Implementation of n-queen's problem. | |
| Text Books &  References  Books | **TEXT BOOKS:**   1. E.Horowitz, S.Sahni, S.Rajasekaran, ”Fundamentals of Computer Algorithms”, 2ndEdition, Universities Press, ISBN: 978-8173716126, 2008.   **REFERENCE BOOKS:**   1. Thomas H.Cormen, Charles E.Leiserson, Ronald L.Rivest, Cliford Stein, 2. “Introduction to Algorithms”, 3rd Edition, Prentice-Hall of India, ISBN: 978-81- 203-4007-7, 2010 3. S.Sridhar, “Design and Analysis of Algorithms”, Oxford University Press, India, ISBN - 13: 978-0-19-809369-5, ISBN-10: 0-19-809369-1, 2015 | |
| E-Resources | 1. <https://nptel.ac.in/courses> 2. <https://freevideolectures.com/university/iitm> | |

**CO-PO Mapping:** 3-High Mapping, 2-Moderate Mapping, 1-Low Mapping, - -Not Mapping

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|  | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** |
| **CO1** | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | - | - |