

Course Title	Design & Analysis of Algorithms
Course Code	DC-321
Credit Hours	3
Category	Domain Core
Prerequisite	Data Structures and Algorithms
Co-Requisite	None
Follow-up	None
Course Description	Introduction; role of algorithms in computing, Analysis on nature of input and size of input Asymptotic notations; Big-O, Big Ω , Big Θ , little-o, little- ω , Sorting Algorithm analysis, loop invariants, Recursion and recurrence relations; Algorithm Design Techniques, Brute Force Approach, Divide-and-conquer approach; Merge, Quick Sort, Greedy approach; Dynamic programming; Elements of Dynamic Programming, Search trees; Heaps; Hashing; Graph algorithms, shortest paths, sparse graphs, String matching; Introduction to complexity classes;
Text Book(s)	Introduction to Algorithms (3rd edition) by Thomas H. Corman, Charles E. Leiserson, Ronald L. Rivest and Clifford Stein
Reference Material	Algorithm Design, (1st edition, 2013/2014), Jon Kleinberg, Eva Tardos, Algorithms, (4th edition, 2011), Robert Sedgewick, Kevin Wayne