

Course: Design and analysis of algorithms

Course Code: noc20-cs71

Session: 2020-21

Duration: 8 Weeks

Assessment procedures: Weekly Assignment (25%) + proctored certification Exam (75%)

Curriculum of the Course:

Week 1:

- Module 1: Introduction
- Module 2: Examples and motivation
- Module 3: Examples and motivation
- Module 4: Asymptotic complexity: informal concepts
- Module 5: Asymptotic complexity: formal notation
- Module 6: Asymptotic complexity: examples
- Assignments MCQ/Fill in blanks (unique answer)

Week 2:

- Module 1: Searching in list: binary search
- Module 2: Sorting: insertion sort
- Module 3: Sorting: selection sort
- Module 4: Sorting: merge sort
- Module 5: Sorting: quicksort
- Module 6: Sorting: stability and other issues
- Assignments MCQ/Fill in blanks
- programming assignment

Week 3:

- Module 1: Graphs: Motivation
- Module 2: Graph exploration: BFS
- Module 3: Graph exploration: DFS
- Module 4: DFS numbering and applications
- Module 5: Directed acyclic graphs
- Module 6: Directed acyclic graphs
- Assignments MCQ/Fill in blanks
- programming assignment

Week 4:

- Module 1: Shortest paths: unweighted and weighted
- Module 2: Single source shortest paths: Dijkstra
- Module 3: Single source shortest paths: Dijkstra
- Module 4: Minimum cost spanning trees: Prim's algorithm
- Module 5: Minimum cost spanning trees: Kruskal's Algorithm
- Module 6: Union-Find data structure
- Assignments MCQ/Fill in blanks
- programming assignment

Week 5:

- Module 1: Divide and conquer: counting inversions
- Module 2: Divide and conquer: nearest pair of points
- Module 3: Priority queues, heaps
- Module 4: Priority queues, heaps
- Module 5: Dijkstra/Prims revisited using heaps
- Module 6: Search Trees: Introduction
- Assignments MCQ/Fill in blanks
- programming assignment

Week 6:

- Module 1: Search Trees: Traversals, insertions, deletions
- Module 2: Search Trees: Balancing
- Module 3: Greedy : Interval scheduling
- Module 4: Greedy : Proof strategies
- Module 5: Greedy : Huffman coding
- Module 6: Dynamic Programming: weighted interval scheduling
- Assignments MCQ/Fill in blanks
- programming assignment

Week 7:

- Module 1: Dynamic Programming: memoization
- Module 2: Dynamic Programming: edit distance
- Module 3: Dynamic Programming: longest ascending subsequence
- Module 4: Dynamic Programming: matrix multiplication
- Module 5: Dynamic Programming: shortest paths: Bellman Ford
- Module 6: Dynamic Programming: shortest paths: Floyd Warshall
- Assignments MCQ/Fill in blanks,
- programming assignment

Week 8:

- Module 1: Intractability: NP completeness
- Module 2: Intractability: reductions
- Module 3: Intractability: examples
- Module 4: Intractability: more examples
- Module 5: Misc topics
- Module 6: Misc topics
- Assignments MCQ/Fill in blanks

List of students enrolled

S. No	Name of Student
1	Aditi Shah
2	Anshita Yadav
3	Anshul Kumar garg
4	Chirag Jain
5	Roopal yadav
6	Devanshu soni
7	gauranshu mathur

8	Jayesh Soni
9	pooja jain
10	Khushi Jain
11	Yash Khandelwal
12	krishnesh khalora
13	kshitij khandelwal
14	Lokesh Choubisa
15	Chirag Jain
16	Mukul jangid
17	Naman Joshi
18	NIKHIL SHARMA
19	Nishant Kumar
20	Nupur mathur
21	pravesh jain
22	rakshita AGARWAL
23	Parikshit Rathore
24	Ritika Jain
25	Robins Kumar
26	rohit agarwal
27	Sagar Alwani
28	Ashik Saini
29	Aman Saini
30	Sajal birla
31	Mayank Saxena
32	Manasvini Sharma
33	Sonali kumawat
34	Jayesh soni
35	Komal soni
36	Tanmay Bhargava
37	Rahul Chandnani
38	Vinay vyas
39	Vinit Kumar Shah
40	Vishal
41	vishnu Sharma
42	Vishwanath Hosmane
43	Vishal prajapat
44	Yashwardhan Gaur