Course Title: Advanced Algorithms

Semester and Year: Autumn 2021

Credit Structure (L-T-P-Cr): 3-0-0

Course Code: IT-580

Prerequisites (if any): Design and Analysis of Algorithms

Instructor’s Name with email: Anuj Tawari, anuj_tawari@daiict.ac.in

Course Objectives: This course covers several advanced topics on design and analysis of algorithms, typically not covered in an introductory course on algorithms.

- Algorithm Design - Kleinberg and Tardos [Addison-Wesley, 2005].

Mode of Delivery: Online lectures

Evaluation Scheme

- Labs and Assignments: NIL
- InSem Exam: 40%
- End Sem Exam: 60%

Lecture Plan: • Basics of algorithm analysis (1 lecture).
- Greedy algorithms (4 lectures).
- Divide and conquer (4 lectures).
- Dynamic programming (3 lectures).
- Graph algorithms (3 lectures).
- NP-completeness (4 lectures).
- Approximation algorithms (4 lectures).
- Randomized algorithms (4 lectures).
- Number theoretic algorithms (3 lectures).