



# DISCRETE MATHEMATICS

**PROF. SUDARSHAN IYENGAR**

Department of Computer Science and Engineering  
IIT Ropar

**TYPE OF COURSE** : Rerun | Core | UG  
**COURSE DURATION** : 12 weeks (20 Jul'20 - 09 Oct'20)  
**EXAM DATE** : 18 Oct 2020

**PROF. NEELDHARA**

IIT Gandhinagar

**INTENDED AUDIENCE** : B.E/B,Tech, M.E,M.Tech

**INDUSTRIES APPLICABLE TO** : Every industry expects candidates to have good aptitude. This course sharpens the overall Quant skills.

**COURSE OUTLINE :**

The course will be an introduction to Discrete Mathematics which comprises of the essentials for a computer science student to go ahead and study any other topics in the subject. The emphasis will be on problem solving as well as proofs. We will be providing motivational illustrations and applications through out the course. The course doesn't assume any pre-requisites except for high school level arithmetic and algebra.

**ABOUT INSTRUCTOR :**

Prof. Sudarshan Iyengar has a Ph.D. from the Indian Institute of Science and is currently working as an assistant professor at IIT Ropar and has been teaching this course from the past 5 years. Apart from this course, he has offered several other courses in IIT Ropar like Discrete Mathematics, Theory of Computation, Cryptography, Probability and Computing etc. His research interests include social networks, crowdsourced knowledge building and computational social sciences.

**COURSE PLAN :**

**Week 1:** Counting

**Week 2:** Set Theory

**Week 3:** Logic

**Week 4:** Relations

**Week 5:** Functions

**Week 6:** Mathematical Induction and Pigeonhole Principle

**Week 7:** Graph Theory - 01

**Week 8:** Graph Theory - 02

**Week 9:** Graph Theory - 03 and Generating Functions

**Week 10:** Principle of Inclusion-Exclusion

**Week 11:** Recurrence relations

**Week 12:** Advanced Topics