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## Discrete Mathematics

By Prof. Sudarshan Iyengar, Prof. Prabuchandran K.J | IIT Ropar, IIT Dharwad

**Learners enrolled: 9972**

### Introduction to the Course\_Discrete Mathematics



#### ABOUT THE COURSE :

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.


**INTENDED AUDIENCE:** Any Interested Learners**PRINCIPAL**

G. Narayanamma Institute of  
Technology & Science (for woman)  
(AUTONOMOUS)  
Shalkpet, Hyderabad - 500 104




INDUSTRY SUP



Industry expects candidates to have good aptitude. This course sharpens the overall Quant skills.  
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## Summary

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Course Status :	Completed
Course Type :	Core
Duration :	12 weeks
Category :	<ul style="list-style-type: none"> <li>Computer Science and Engineering</li> <li>Foundations of Computing</li> <li>Foundations of Mathematics</li> </ul>
Credit Points :	3
Level :	Undergraduate
Start Date :	25 Jul 2022
End Date :	14 Oct 2022
Enrollment Ends :	08 Aug 2022
Exam Date :	30 Oct 2022 IST

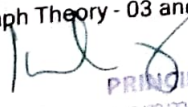
Note: This exam date is subjected to change based on seat availability. You can check final exam date on your hall ticket.

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(https://www.addtoany.com/share?url=https%3A%2F%2Fonlinecourses.nptel.ac.in%2Fnoc22\_cs123%2Fpreview&title=Discrete%20Mathematics%20-%20Course)

## Course layout

- Week 1: Counting
- Week 2: Set Theory
- Week 3: Logic
- Week 4: Relations
- Week 5: Functions
- Week 6: Mathematical Induction and Pigionhole Principle
- Week 7: Graph Theory - 01
- Week 8: Graph Theory - 02
- Week 9: Graph Theory - 03 and Generating Functions

  
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Week 10: Principles of Combinatorics

Week 11: Recursion (https://swayam.gov.in/)

Week 12: Advanced Topics



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## Books and references

1. Discrete and Combinatorial Mathematics by Ralph P Grimaldi
2. Discrete Mathematics and its Applications by Kenneth H Rosen

## Instructor bio



**Prof. Sudarshan Iyengar**

IIT Ropar

Prof. Sudarshan Iyengar, Associate Professor at the CSE at IIT Ropar has a Ph.D. from the Indian Institute of Science (IISc). An exemplary teacher who has delivered over 350 popular science talks to students of high school and advanced graduate programmes. Dr. Sudarshan has offered more than 100 hours of online lectures with novel teaching methodologies that have reached lakhs of Students. His research interests include Data Sciences, Social Computing, Social Networks, Collective Intelligence, Crowdsourced Technologies and Secure Computation



**Prof. Prabuchandran K.J**

IIT Dharwad

Prof. Prabuchandran K.J. is an Assistant Professor at IIT Dharwad. He completed Ph.D. from the Department of Computer Science and Automation, IISc in the area of Reinforcement Learning. Post his PhD, Prabuchandran worked as Research Scientist at IBM Research Labs, India for an year and half on change detection algorithms for multivariate compositional data. After that he pursued his postdoctoral research at IISc, Bangalore as an Amazon-IISc Postdoctoral scholar for an year and half on Multi-agent Reinforcement Learning and Stochastic Optimization algorithms. His research lies in the intersection of reinforcement learning, stochastic control & optimization, Machine Learning, Bayesian Optimization and stochastic approximation algorithms. His research interest also focuses on utilizing techniques from these fields in solving problems arising in applications like wireless sensor networks, traffic signal control and social networks.



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**Shaikpet, Hyderabad – 500104  
Department: Information Technology**

**2022-23**

**REPORT**

**NPTEL Course on " Discrete Mathematics"**

**Date of program: Jul-Oct 2022**

**Resource person: Prof. Sudarshan Iyengar**

**About the Program:**

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. Every industry expects candidates to have good aptitude. This course sharpens the overall Quant skills.

Signature of the Faculty member

*A. Nagarani*

*[Handwritten Signature]*

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*Nagarani*