PMRF-ISSS Teaching Programme

Prime Minister Research Fellowship students' teaching requirement facilitated by the Institute of Smart Structures and Systems

Module PMRF-ISSS055/2025

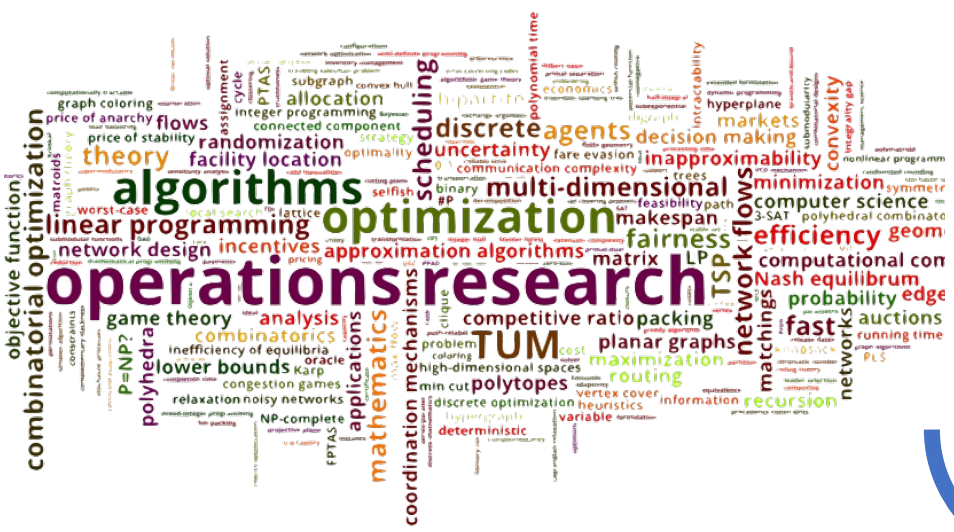
Applied Operations Research using Python

Name of the PMRF student

Rupkatha Ghosh

Prerequisites:

- Basic knowledge of linear algebra and calculus
- Familiarity with Python (no advanced programming needed)



Details of the content of the module

This course will cover interactive lectures, hands-on problem-solving sessions, live coding demos, and group discussions using real-world Operations Research (OR) problems.

Week 1: Introduction to OR, Linear Programming (LP) fundamentals, Python Setup (PuLP/Gurobi)

Week 2: Simplex Method

Week 3: Sensitivity Analysis & Concept of Duality

Week 4: Transportation & Assignment Problems

Week 5: Integer Linear Programming (ILP), Mixed ILP & Dynamic Programming (DP)

Week 6: Goal Programming (GP), Unconstrained Optimization: Gradient Descent, Newton-Raphson

Week 7: Capstone Case Studies: Modelling in Python

Schedule of the module

Start Date: 7th June 2025

End Date: 20th July 2025

Lecture Timings: Every Saturday and Sunday (8:30 am – 12:30 pm)

Discussion Timings: Sunday (11:30 am – 12:30 pm)

Meeting link : Will be shared later

Link

Contact email ID: isss.forum@gmail.com

Registration link:

https://forms.gle/dLTDpaJG1H7p5hSy9