

Optimization Course Project Guidelines

As part of this course, you are required to form teams and complete a project applying optimization techniques to a real-world problem. This project will help you apply the concepts learned in class and gain hands-on experience in real-world problem-solving.

You are free to:

- Choose any application domain (e.g., engineering, economics, ML, operations research, etc.).
- Use any optimization solver or programming tool (e.g., MATLAB, Python, cvxpy, etc.).
- Focus on mathematical modeling, algorithmic implementation/applying the right solver, and a critical interpretation/analysis of the results.

Team size: 2 or 3 members

Deliverables

1. **1-page proposal** A 1-page proposal describing the problem statement and planned method.
2. **Report**
 - Problem statement and motivation
 - Mathematical formulation (objective, constraints, variables)
 - Methodology and solver details
 - Results, analysis, and discussion
3. **Code** A zip file that includes all necessary files for the code to execute and a readme file. The readme file should state team name, Member names, project title, short description, libraries used, and setup instructions. Submission format: team_name.zip
4. **Demo & Viva** Explain your model, method, and results. Be prepared to justify choices and discuss insights.

Evaluation Criteria

Criterion	Weight
Problem formulation	30%
Implementation	30%
Results and analysis	20%
Demo and viva	20%

Timeline

- Team formation, choosing the project topic, updating the same in the shared spreadsheet — **Due: 12/11/2025**
- 1-page proposal — **Due: 16/11/2025**
- Project submission: (Report, Code & Demo/Viva) — **Due: 23/11/2025**

Example Themes

Engineering design, trajectory planning, regression with regularization, scheduling, portfolio optimization, etc.

Note

- Should be original work only. No AI misuse. All code must be written by the team members themselves.
- Clarity, correctness, and analysis are valued.