Project Overview

The purpose of this course project is to give you hands-on experience in **applying operations research (O.R.) methods**—including modeling, formulation, and optimization—to solve **real-world decision problems** described in published case studies. Each group will work on **one assigned case study**.

This project is not just about solving a mathematical model. It is about **understanding the business context**, **identifying decision variables**, **building a suitable model**, and **interpreting your results** in a way that makes sense to decision-makers.

Timeline

- **Final Presentations**: [26 May, 2 June]
- **Group Presentation Duration**: 20 minutes per group, including Q&A

Project Requirements

Each group is expected to:

1. Understand the Case
    - Read your assigned case carefully and understand the business context and challenges.
    - Clearly identify the **key decision-making problem** to be solved.
2. Data Identification and Preparation
    - Locate all relevant data tables from the case text, appendices, or external supplementary spreadsheets.
    - If full data tables are missing:
        - Search online or reconstruct the data based on reasonable judgment.
        - Contact the teaching assistant for help.
3. Modeling and Solution
    - Formulate the problem mathematically: define decision variables, the objective function, and constraints.
    - You are recommened to solve the model using **Python + COPT Solver**.
4. Analysis and Insight
    - Interpret the results in plain business language.
    - Provide business recommendations supported by model outputs.
    - Explicitly state model assumptions and limitations.

5. Final Presentation: Prepare a **PowerPoint presentation** that includes:
    - Problem overview and business context
    - Data and assumptions
    - Model formulation (objective function and constraints)
    - Solution methodology and implementation (Python + COPT)
    - Results, visualization, and business interpretation
    - (Optional) Experience and selected prompts when using large language models (LLMs)

Use of Large Language Models (LLMs)

You are encouraged to use AI tools such as Deepseek/ChatGPT to:

- Help clean or understand data
- Assist in model formulation or debugging
- Summarize or interpret results

Please include selected prompts in your presentation if used, and optionally share your experience.

Deliverables

- PowerPoint slides for your final in-class presentation
- (Optional) Python code files or Jupyter Notebooks

Grading Criteria

Criteria	**Weight**
Problem understanding & structure	20%
Modeling formulation	20%
Solution implementation	20%
Insight & business interpretation	20%
Presentation quality	20%

If you have any questions or trouble accessing case materials, please reach out early.

Have fun, and good luck turning operations research into real-world insight!