Operations Research

Fall 2017

Mini-project Instruction

Purpose: Apply the methodologies of linear programming to the "course schedule optimization".

Guideline: This project has 30% in your final grade. This is an individual-work project. The project should follow the project instruction and write a brief project report (around 2-3 pages including figure and table). The report violating the project instruction is not accepted. Please "zip" project files with name "OR_miniproject_NAME_ID" with report (eg. Word), dataset (eg. txt, csv) and code (eg. Python+Gurobi) to cylee@ncku.edu.tw before **5pm, Nov. 17, 2017**. Late project report is not accepted.

Content and Format:

1. Title

Give a title to your project work, eg: 最佳通識排課表, 最佳日語學習課表…

2. Motivation and Purpose

2.1 Motivation: "因為每學期都要選通識課程，通識課程眾多", or "課程常常會衝突"

2.2 Objective function and constraints: mathematical forms and their detailed description.

3. Methodology and Linear Programming

3.1 Course Understanding: eg. 通識課程時間, 未來對找工作重要性 or 個人喜好程度

3.2 Assumption: eg. CSIE 大三必修課時段固定再來排通識或日語, 沒有選課的限制, or 同個時間只能有一個課程

3.3 Method: Linear programming, eg. assignment problem

3.4 Objective function and constraints: mathematical forms and their detailed description.
eg. 目標函數最大化整體喜好程度

eg. 限制式每個課程只有選與不選、一個課程只能被選一次、同個時間只能有一個課程被選到

4. Data Collection and Analysis Result

4.1 Data Collection: Describe the data source and how your get this data. If you don't have/use real data set, please justify your data.

4.2 Analysis Result: Use the Python + Gurobi to solve your mathematical formulation. What's the result or the best alternative you suggest?

4.3 Summary and Conclusion

Finally, please remember this project is to let you know how to apply the linear programming you learn in class to real-world setting. 每個人對問題的瞭解與判斷不同, 可能有不同的線性規劃模型, 為了簡化問題, 你可以做任何假設, 只要還算合理即可. (切記: 不要搞得太複雜而解不出來!) **The original or innovative idea is encouraged**.