MATH3202 Operations Research & Mathematical Planning 2018

Assignment 1 – Linear Programming

This assignment is due by 6pm on Friday, March 23rd and is worth 10% of your final grade. You can do each assignment in pairs, with a single submission.

You have just started your first job with an Operations Research consulting company and you are keen to impress your boss who has a good technical understanding of OR. The first project you are assigned is for Pure Fresh, a juice company wanting to improve their operations. Communications to you from the company will be provided at

https://courses.smp.uq.edu.au/MATH3202

The first communication will appear at 5pm on Friday, March 2nd with the final communication appearing on or before Friday, March 16th.

You will need to prepare a report which includes two main sections:

Section A – Report to your boss

- A general mathematical formulation of the problem, including definitions of sets, data, variables, objective function and constraints. *7 marks*
- A Python file with the problem modelled for Gurobi. This should be easy to relate back to the formulation. Your boss will attempt to execute this model. *5 marks*

Section B – Report to the client

- Written responses that clearly and concisely address the needs of the client given through the communications. *5 marks*
- Brief insights into the solution, such as identifying key constraints or explaining the effects on costs of additional constraints provided by the client. *3 marks*

Submit your report and Python files via Blackboard, using PDF for the report (saved from Word or created in LaTeX).

Only one submission per pair is necessary but make sure both names are clearly shown on your report. Each student will receive separate data from the client but a pair need only consider one data set in the report.