MATH3202/7232 Operations Research & Mathematical Planning 2017

Assignment 2 – Integer Programming

This assignment is due by 6pm on Friday, April 28th and is worth 25% of your final grade. You can do each assignment in pairs, with a single submission.

Your job with an Operations Research consulting company is going well. Your boss and client would like you to continue working on a project for the fertiliser company that wants to further improve its import of raw materials. Communications to you from the company will be provided at

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

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*
- An explanation of how integer and/or binary variables have been used to model ship size and hold separations. *2 marks*
- A proposal for how variable-sized holds could be modelled for future ship options. *2 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 address the needs of the client given through the communications. *5 marks*
- Insight into the solution, such as identifying key constraints or explaining the effects on costs of additional constraints provided by the client. *4 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.