Fundamentals of Operational Research
Tutorial 4
School of Mathematics
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Year 2022/2023

1. As part of the decisions on a drug test, a mathematical optimization model is used. Include constraints that represent the following conditions:

(a) If drug A is used, then drug B must also be used.

(b) If drug C is used, neither drug B nor drug D can be used.

(c) If drug D is used, then at least one of drug A or drug E must be used.

(d) If drug A and drug C are used, then drug F and drug G cannot both be used.

2. Let x_i be the proportion of component C_i in a mixture. Model the following condition: "If the proportion of C_1 exceeds 0.3, then the proportion of C_2 must be at least 0.1 and the proportion of C_3 must not exceed 0.2".

3. Model the condition

$$\text{“}0 \leq x_1 \leq 1 \text{ and } x_2 = 0\text{”} \text{ or } \text{“}0 \leq x_2 \leq 1 \text{ and } x_1 = 0\text{”}.$$