

ANL355 Applied Operations Research

Level: 3

Credit Units: 5 Credit Units

Language: ENGLISH

Presentation Pattern: EVERY JAN

Synopsis:

ANL355 Applied Operations Research introduces students to the optimization process and covers techniques such as the Simplex Method, Network Simplex, integer programming, non-linear programming and dynamic programming. Case studies will be used extensively to help illustrate the various techniques covered. Hands-on using computer software (e.g., Excel, AMPL) will also be taught in this course.

Topics:

- Foundations of Probability and Basic Linear Algebra
- Operations Research & Decision Analysis
- Linear Optimisation Model
- Geometry of the Solution Space
- Nonlinear Optimisation
- Discrete Optimisation
- Decision Tree Analysis
- Linear Optimisation under Uncertainty
- Risk vs Ambiguity
- Simulation Modelling
- Random Number Generation
- Integration in Decision Modelling

Textbooks:

Wayne L. Winston: Operations Research: Applications and Algorithms 4 Cengage
ISBN-13: 9789814844956-AA

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Learning Outcome:

- Explain relevant concepts used in Operations Research
- Describe the relevant business problem to be solved
- Determine the relevant operations technique to use for a given business problem
- Formulate mathematical models in daily business operations
- Interpret the results of the proposed mathematical optimization models
- Evaluate the results of various proposed mathematical optimization models for effective decision-making in complex scenarios
- Use optimization solver and computer tools to derive the optimal or near-optimal solution of proposed mathematical optimization problems

Assessment Strategies:

Continuous Assessment Component	Weightage (%)
PRE-COURSE QUIZ	2
PRE-CLASS QUIZ	2
PRE-CLASS QUIZ	2
PARTICIPATION	6
GROUP BASED ASSIGNMENT	38
Sub-Total	50

Examinable Component	Weightage (%)
Written Exam	50
Sub-Total	50

Weightage Total **100**