

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

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 (Daytime Class):

Components	Description	Weightage Allocation (%)
Overall Continuous Assessment	PRE-COURSE QUIZ 1	2
	PRE-CLASS QUIZ 1	2
	PRE-CLASS QUIZ 2	2
	TUTOR-MARKED ASSIGNMENT 1	18
	PARTICIPATION 1	6
	GROUP BASED ASSIGNMENT 1	20
Overall Examinable Components	Written Exam	50
Total		100

Assessment Strategies (Online Class):

Components	Description	Weightage Allocation (%)
Overall Continuous Assessment	PRE-CLASS QUIZ 1	2
	PRE-CLASS QUIZ 2	2
	PRE-COURSE QUIZ 1	2
	DISCUSSION BOARD 1	10
	GROUP BASED ASSIGNMENT 1	10
	PARTICIPATION 1	6
	TUTOR-MARKED ASSIGNMENT 1	18
Overall Examinable Components	Written Exam	50
Total		100

