

OPERATIONAL RESEARCH & OPTIMISATION

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Outline of topics

- Descriptive Statistics:
 - Using Graphical Displays to summarize Data for Two Variables
 - Be able to interpret the graph;
 - Be able to create the graph based on the given data in Excel;
- Measures of Variability:
 - Different measurements: understand the meaning and be able to compute them;

Outline of topics

- Simple linear regression:
 - Develop the least squares estimated regression model;
 - Measuring the fit of the regression model;
 - Use excel to plot the estimated regression equation;
 - Assumptions of the regression model;
 - Test the model for significance;
 - Interpretation of ANOVA table;

Outline of topics

- Multiple linear regression:
 - Develop the least squares estimated regression model;
 - Measuring the fit of the regression model;
 - Use excel to plot the estimated regression equation;
 - Assumptions of the regression model;
 - Test the model for significance;
 - Interpretation of ANOVA table;
 - Using the Estimated Regression Equation for Estimation and Prediction
 - Categorical Independent Variables
 - Residual Analysis

Outline of topics

- Linear programming:
 - Model formulation;
 - Graphic method for LP
- Network optimisation:
 - Terminology of network;
 - Be able to identify the structures of network models;
 - Be able to formulate the transportation problem, assignment problem and minimum cost flow problem;
 - Be able to formulate the Maximum flow problem and Shortest-path problem;
 - Understand the principle of heuristic method and be able to apply simple heuristic method to problems;

Outline of topics

- Integer programming:
 - General Integer Programming model techniques
 - Packing Optimisation Problems
 - Capacity and Indicator Variables
 - Knapsack Type Problems
 - Generalised assignment problems
 - Bin Packing Type Problems