The Hong Kong Polytechnic University

Subject Description Form

Subject Code	LGT3102
Subject Title	Management Science
Credit Value	3
Level	3
Normal Duration	1-semester
Pre-requisite / Co-requisite/ Exclusion	Nil
Objectives	To introduce to students the methodology of Management Science as a scientific approach to managerial decision making. To impart in students the concepts, theories and techniques of a variety of management science methods. To develop students' ability and confidence in the use of management science methods for solving management decision problems.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: a. Have basic knowledge of the principles, concepts and techniques in management science. b. Gain the basic technical and analytical skills for management science. c. Apply management science in a managerial context for management decision-making. Students are expected to be able to demonstrate a range of skills to solve problems in management science (**BBA Outcome 14**). These include: d. Critical thinking and analytical skills that include the capability to identify assumptions, evaluate statements, detect false logic and formulate problems. e. Effective problem solving and decision-making using appropriate analytical skills including identifying, formulating and solving problems in management science. f. Numeracy and quantitative skills including the use of models in management science.
Subject Synopsis/ Indicative Syllabus	The methodology of Management Science Linear Programming: model formulation, graphical solution for problems with two variables, computer solutions, sensitivity analysis Assignment and Transportation Problems Goal Programming

<table>
<tr><td></td><td>Integer Programming
Network Modeling: shortest route, maximal flow, minimum cost flow
Waiting Line Models</td></tr>
<tr><td>Teaching/Learning Methodology</td><td>Concepts and techniques will be introduced through lectures. In seminars students are required to apply their knowledge and skills to analyse and solve various management science problems. Use of relevant computer packages will be included.</td></tr>
<tr><td>Assessment Methods in Alignment with Intended Learning Outcomes</td><td>
<table>
<tr><td rowspan="2">Specific assessment methods/tasks</td><td rowspan="2">% weighting</td><td colspan="6">Intended subject learning outcomes to be assessed (Please tick as appropriate)</td></tr>
<tr><td>a</td><td>b</td><td>c</td><td>d</td><td>e</td><td>f</td></tr>
<tr><td>1. Attendance and class participation</td><td>10%</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td></tr>
<tr><td>2. Assignments</td><td>40%</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td></tr>
<tr><td>3. Examination</td><td>50%</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td></tr>
<tr><td>Total</td><td>100 %</td><td colspan="6"></td></tr>
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Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes: The assessment methods include attendance and class participation, assignments, and examination. Problems will be set to test the students' performance with respect to the learning outcomes.
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<tr><td>Student Study Effort Expected</td><td>
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<tr><td>Class contact:</td><td></td></tr>
<tr><td>▪ Lectures</td><td>26 Hrs.</td></tr>
<tr><td>▪ Seminars</td><td>13 Hrs.</td></tr>
<tr><td>Other student study effort:</td><td></td></tr>
<tr><td>▪ Assignments</td><td>27 Hrs.</td></tr>
<tr><td>▪ Revisions</td><td>60 Hrs.</td></tr>
<tr><td>Total student study effort</td><td>126 Hrs.</td></tr>
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<tr><td>Reading List and References</td><td>J.D. Camm, J.J. Cochran, M.J. Fry, J.W. Ohlmann, D.R. Anderson, D.J. Sweeney and T.A. Williams, An Introduction to Management Science: Quantitative Approaches to Decision Making, 16th edition, Cengage Learning, 2023.

B. Render, R.M. Stair, M.E. Hanna and T.S. Hale, Quantitative Analysis for Management, 14th edition, Pearson, 2024.

F.S. Hillier, M.S. Hillier, K. Schmedders and M. Stephens, Introduction to Management Science: A Modeling and Case Studies Approach with Spreadsheets, 6th edition, McGraw Hill, 2019.

W.L. Winston, Microsoft Excel Data Analysis and Business Modeling: (Office 2021 and Microsoft 365), 7th edition, Pearson, 2022.</td></tr>
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