

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
Role and Purposes	<p>To introduce to students the methodology of Management Science as a scientific approach to managerial decision making.</p> <p>To impart in students the concepts, theories and techniques of a variety of management science methods. (Outcomes 3 and 6)</p> <p>To develop students' ability and confidence in the use of management science methods for solving management decision problems. (Outcome 8)</p>
Subject Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> Have a basic understanding of the principles, concepts and techniques in management science. Understand the basic technical and analytical skills for management science. (Outcomes 3 and 6) Understand the application of management science in a managerial context for management decision-making. (Outcome 8) <p>Students are expected to be able to demonstrate a range of skills to solve problems in management science. These include:</p> <ol style="list-style-type: none"> Critical thinking and analytical skills that include the capability to identify assumptions, evaluate statements, detect false logic and formulate problems. (Outcomes 3, 6, and 8) Effective problem solving and decision-making using appropriate analytical skills including identifying, formulating and solving problems in management science. (Outcomes 3, 6, and 8) Numeracy and quantitative skills including the use of models in management science. (Outcomes 3 and 6)
Subject Synopsis/ Indicative Syllabus	<p>The methodology of Management Science</p> <p>Linear Programming: model formulation, graphical solution for problems with two variables, computer solutions, sensitivity analysis</p> <p>Assignment, Transportation, and Transshipment Problems</p>

	<p>Goal Programming</p> <p>Integer Programming</p> <p>Network Modeling: shortest route, maximal flow, minimum cost flow</p> <p>Waiting Line Models</p> <p>Simulation</p>																																														
<p>Teaching/Learning Methodology</p>	<p>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.</p>																																														
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p>	<table border="1" data-bbox="523 674 1482 1120"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="6">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> <th>e</th> <th>f</th> </tr> </thead> <tbody> <tr> <td>1. Assignments</td> <td>20%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>2. Tests</td> <td>30%</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> </tbody> </table> <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes: The assessment methods include assignments, tests, and examination. Problems will be set to test the students' performance with respect to the learning outcomes.</p> <p><i>To pass this subject, students are required to obtain Grade D or above in BOTH the Continuous Assessment and Exam components.</i></p>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)						a	b	c	d	e	f	1. Assignments	20%	✓	✓	✓	✓	✓	✓	2. Tests	30%	✓	✓	✓	✓	✓	✓	3. Examination	50%	✓	✓	✓	✓	✓	✓	Total	100 %						
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<p>Reading List and References</p>	<p>B. Render, R.M. Stair, M.E. Hanna and T.S. Hale, <i>Quantitative Analysis for Management</i>, 13rd edition, Pearson, 2018.</p> <p>F.S. Hillier, M.S. Hillier, K. Schmedders and Molly Stephens, <i>Introduction to Management Science: A Modeling and Case Studies Approach with Spreadsheets</i>, 5th edition, McGraw Hill, 2014.</p> <p>D.R. Anderson, <i>An Introduction to Management Science: Quantitative Approaches to Decision Making</i>, 15th edition, Cengage Learning, 2019.</p>																																														

	<p>K.R. Baker and K.H. Kropp, <i>Management Science: An Introduction to the Use of Decision Models</i>, Wiley, 1985.</p>
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	<p>J.H. Moore and L.R. Weatherford. <i>Decision Making with Microsoft Excel</i>, 6th edition, Prentice Hall, 2001.</p>
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