

The Hong Kong Polytechnic University

Subject Description Form

Subject Code	LGT5102
Subject Title	Models for Decision Making
Credit Value	3
Level	5
Normal Duration	1-semester
Exclusion	MGT532 Deterministic Operations Research
Role and Purposes	<ul style="list-style-type: none"> ▪ To introduce students to the methodology of management science as a scientific approach to managerial decision making. ▪ To impart on 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. <p>This subject contributes to the following Intended Learning Outcomes for the MSc programme(s):</p> <p>MSc in Global Supply Chain Management</p> <p>#2 Build up operations and logistics concepts</p>
Subject Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> a. Understand the methodology of management science as a scientific approach to managerial decision making. b. Understand the concepts, theories and techniques of a variety of management science methods. c. Develop the ability and confidence in the use of management science methods for solving management decision problems.
Subject Synopsis/ Indicative Syllabus	<p>Introduction Applications and impact; history; rise of business analytics; management science modeling approach.</p> <p>Linear Programming Formulation; graphical solution; simplex algorithm; sensitivity analysis; applications.</p> <p>Integer Programming Formulation; Branch and Bound method; applications.</p> <p>Network Models Transportation and assignment application; shortest path problems; network flow problems.</p>

	<p>Queueing models Examples of queueing systems; performance measures; Little's law; single/multiple servers models; priority models; economic analysis.</p> <p>Dynamic Programming Resource allocation problems; inventory problems; formulation; applications.</p> <p>Spreadsheet modeling in practice Process of spreadsheet modeling; guidelines for good spreadsheet model; methods for testing spreadsheet models.</p> <p>Case Study Application of management science models in real-life managerial decision making.</p>																																												
<p>Teaching/Learning Methodology</p>	<p>Concepts and techniques will be introduced through lectures. Students are required to apply the knowledge and skills to analyse and solve various realistic management science problems in the form of case study. The use of relevant computer package will be encouraged.</p>																																												
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p>	<table border="1" data-bbox="518 943 1474 1364"> <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></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>Continuous Assessment</td> <td>50 %</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td>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:</p> <p>Coursework includes homework assignments, class participation, test(s), term project/group case study, etc. Through term project, students learn to apply the theories to some real life situations. Examination are also required to test their understanding and familiarity with the knowledge.</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				Continuous Assessment	50 %	✓	✓	✓				Examination	50 %	✓	✓	✓				Total	100 %						
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<p>Student Study Effort Expected</p>	<p>Class contact:</p>																																												
	<ul style="list-style-type: none"> ▪ Lectures / Tutorials 						<p>39 Hrs.</p>																																						
	<p>Other student study effort:</p>																																												
	<ul style="list-style-type: none"> ▪ Revision, doing exercises and cases 						<p>87 Hrs.</p>																																						

	Total student study effort	126 Hrs.

<p>Reading List and References</p>	<p><i>Reading List & References</i></p> <p>F.S. Hillier and M.S. Hillier, Introduction to Management Science, latest edition, McGraw Hill</p> <p>Hillier, F.S. and Liebermann, G.J., <i>Introduction to Operations Research</i>, latest ed., McGraw-Hill.</p> <p>Lapin, L.L., <i>Quantitative Methods for Business Decisions with Cases</i>, latest ed., Dryden.</p> <p>Render, B., Stair, R.M.Jr. and Greenberg, I., <i>Cases and Readings in Management Science</i>, latest ed., Allyn and Bacon.</p> <p>Winston, W.L., <i>Operations Research: Algorithms and Applications</i>, latest ed., Duxbury Press.</p> <p>Journals</p> <p>Interfaces OR/MS Today</p>
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