Unit Title	Introduction to Management Science
Programme(s)/Course	BABS/BABA
Level	5
Ref No:	AAA-5-999
Credit Value	20 CAT Points
Student Study hours	Contact hours: 64 Student managed learning hours: 136
Pre-requisite learning	None
Co-requisites	None
Excluded combinations	None
Unit Coordinator [Name + e mail address]	Martin Abram abrammr@lsbu.ac.uk
Parent Department	Business
Parent Course	BABS/BABA
Description [100 words max]	The Unit examines some of the techniques of Management Science and uses them to solve a range of problems typically needing to be solved by managers who need to make decisions. The techniques used include linear programming, the use of appropriate probability models and a variety of decision-making criterion. Problems will be approached using both paper based methods and by way of the use of appropriate software.
JACS Code	
Aims	The aim of this unit is to introduce a range of specific concepts and quantitative techniques essential for the management of operations, production, material planning and quality assurance functions. Managers are trained to make decisions. Making decisions is what they are paid to do. Some decisions are made based on 'intuition'. Others, such as deciding what combination of resources generates the maximum profit in a manufacturing system, will benefit from a more structured approach that makes use of the quantitative techniques introduced in this Unit. Decisions are usually taken under one of three sets of conditions:- certainty, uncertainty and risk. This Unit will look at problems in all three

	of these.
Learning outcomes	**Knowledge and Understanding** 1. Identify situations where different probability models are appropriate and solve problems using these models. 2. Use network analysis to determine the critical path of a project. 3. Formulate and solve a number of resource allocation problems. 4. Construct payoff and regret tables and use them with a variety of criteria to make decisions. 5. Construct 'Decision Trees' to model the decision making process and use them to make decisions. 6. Identify when a simulation is an appropriate method of solving problems and develop simple examples. **Intellectual Skills** 1. Appreciate the need for objective evidence to help support business decisions 2. Identify the model appropriate for a given business problem. **Practical Skills** 1. Interpret computer software output to solve a variety of problems. 2. Use appropriate computer software to solve problems in this area. **Transferable Skills** As with most quantitative techniques all of the above have the potential to be of use in other areas of study.
Employability	Most jobs require the ability to understand, interpret and present data in a variety of numerical forms. This Unit gives students the opportunity to develop these skills in a variety of contexts. The emphasis on financial mathematics gives an introduction to some of the more commonly used financial instruments. Knowledge of the use of the 'Solver' add-in to Excel has extensive applications
Teaching & Learning Pattern	The teaching strategy will be a mixture of formal lectures together with the opportunity to put into practice the principles and techniques acquired. The classes will comprise sessions were the theory is introduced and students consolidate their knowledge by solving problems using paper based methods. If the numbers opting for this Unit are sufficient then the 'team teaching' approach will be used. These are complemented by the use of the Excel Solver to build models to solve some of the same problems. During the taught sessions academic staff will be on hand to give help to individual students as and when needed.
Indicative content	The tools of operational research. Formulating linear constraints and objective functions; where relevant reference will be made to the use of appropriate software packages and, in particular, the interpretation of the

	output produced by such packages will be examined.
	Special cases of linear programming problems - the assignment and transportation problems. In these cases both maximisation and minimisation problems will be covered.
	Dynamic Programming - shortest route and knapsack problems
	Payoff tables - the maximax, maximin, realism and expected value criteria. Value of perfect information. Regret tables - the minimax criterion.
	Network analysis – shortest finish times, critical paths. This to be done when the activity times are either known with certainty or with uncertainty.
	Decision trees - the representation of complex decision making structures, expected value criterion and the value of information.
	Simulations - manually construction and Excel used to model single and multi-server queues. Analysis of wait and idle times.
Assessment method (Please give details – elements, weightings, sequence of elements, final component)	The assessment will comprise 2 components:- A computer lab based time constrained assignment that will take place in Week 12. The questions used will be of the same type that students will have studied in the previous 11 weeks. Students will be allowed to refer to any notes but only those in paper form. Reference to electronic sources (memory sticks, Blackboard etc.) will NOT be allowed. This will carry a weighting of 40%. A 2-hour examination at the end of the semester covering ALL the material in the Unit. This will be closed book. However students will be allowed to refer to up to 2 A4 sides of notes prepared by themselves. This will carry a weighting of 60% To satisfy the examiners candidates must normally achieve an overall mark of 40%. A minimum mark of 30% will be required for each of the two elements above.
Indicative Reading	1. Claire Morris - Quantitative Approaches in Business Studies (6th Edition),Prentice Hall, 2003 2. Barry Render et al - Quantitative Analysis for Management (10th Edition), Pearson, 2009 3. Louise Swift - Quantitative Methods for Business, Management & Finance (2nd Edition), Palgrave, 2005

	4. Bernard W. Taylor III - Introduction to Management Science (9th Edition), Prentice Hall, 2007
`**Other Learning Resource:**	There is a Blackboard site available to support this Unit. A variety of materials will be available on this site which students should find useful in supporting their learning. Amongst the materials available are:- 1. Interactive notes covering each of the taught sessions. 2. A copy of the notes produced by the lecturer during the session. 3. Copies of specimen examples of the assessments together with full solutions. A CD_ROM will be made available in weeks 12 containing copies of most of the information on the Blackboard site. This is seen primarily as a 'backup' in cases where students have difficulty in accessing the Blackboard site during their revision.