

MSc in Business Analytics Programme Curriculum

Semester 1 : Four core subjects

MIS40530 Numerical Analytics and Software : This module introduces the essentials of algorithms, data types, programming and relational databases (Software), and numerical methods implemented on computers (Numerical Analytics). The module will have a significant practical element, concerning the implementation of algorithms in a programming language, Java or C++.

MIS40540 Project Management and Decision Analytics : The Project Management component of this module takes well-known management methodologies and typologies and breaks them down to reveal their underlying dimensions and variables. The second Decision Analytics part applies Multiple Criteria Decision-Making, an analytical approach to real decision applications in an environment where management objectives can be conflicting.

STAT40370 Applied Probability and Statistics : The objective of this module is to develop an understanding of the application of probability and statistics to problems in business and industry, and to provide the basis for the use of simulation modelling. Following completion of this module students will be able to calculate probabilities and compute expectations and variances for several discrete and continuous distributions, perform simple linear regression and conduct standard hypothesis tests and compute confidence intervals.

MATH40210 Quantitative Methods : The objective of this module is to provide a foundation in the mathematical techniques used in quantitative business applications in finance and management science. The module includes the solution of quantitative problems in business analytics and finance with the use of linear algebra, calculus and differential equations. This provides the necessary background for students to tackle the quantitative and analytic problems which they will encounter in later courses and in their future careers.

Semester 2 : Four subjects from five options

MIS40550 Network Software Modelling : This module continues the study of algorithms and data types begun in MIS40530, concentrating on graph (network) algorithms, and their application in Business Analytics, especially in network optimisation. The module will have a practical element, implementing algorithms in a programming language, with emphasis on good practice from analysis and design to implementation, including program testing.

MIS40560 Decision Support and Business Intelligence : This module looks at how Decision Support and Intelligent Systems can assist in management decision making. Decision Support Systems can be differentiated from other types of information system in that they are directed towards use by users who are skilled in their subject area and who are supported rather than replaced by the use of the computer. Intelligent systems discussed include Expert Systems, Case Base Reasoning and Neural networks.

MIS40520 Analytical Business Modelling : The object of this module is to develop the ability to use software to implement quantitative models to address management problems in business and industry. The focus is on applied techniques such as optimisation that can be used in problem solving.

MAPH40270 Simulation Modelling and Analysis : The objective of this module is to introduce the fundamentals of discrete event simulation and its implementation in a computer program and to introduce potential applications of simulation in industry. The module will cover the basics of modelling, simulation and analysis, including developing the theoretical background needed in probability theory and stochastic processes.

COMP40740 Data Mining Models and Techniques : This module presents the important concepts of data mining and how these concepts are implemented and used in real-world applications. The key idea behind this module is to integrate the theory and practice of data mining with reference to real-world problems and cases to illustrate the concepts and the implementation issues.

Dissertation : The dissertation is one third of the work on the programme and concerns a real management problem, on a project which is expected to be mathematically complex and to require computer programming implementation.