MSC (DATA SCIENCE AND ANALYTICS)

Programme Learning Outcomes

Programme Learning Outcomes for MSc (Data Science and Analytics) (NFQ Level 9, Major Award)

On successful completion of this programme, students should be able to:

- Interpret large, heterogeneous data sources by comparing and selecting appropriate data analytic techniques, using software tools for data storage/management and analysis, machine learning, and probabilistic and statistical methods;
- Describe the fundamental theories, models and principles of statistical methods, and carry out a wide range of calculations involved in statistical decision making, modelling, hypothesis generation and inference;
- Describe the fundamental theories, models and principles of computational methods for storing, processing and performing inference on large data sets; examples include machine learning, data mining and probabilistic methods;
- Manage large amounts of data using modern database tools, and understand the management implications of hardware, software and bandwidth constraints;
- Analyse data selected from a range of domains such as manufacturing, bio-informatics, marketing, social networking, finance, fraud detection, and drug discovery;
- Perform computational/statistical analyses and create visualizations to aid in understanding heterogeneous data;
- Summarize and communicate, in written and oral form, computational and statistical models and techniques, and be able to visualise this information in order to best present such summaries to technical and non-technical audiences;
- Analyse problems of a computational and/or quantitative nature, encountered in a range of types of large-scale data, and construct solutions to such problems using the tools and skills of modern data analytics, including the use of machine learning, statistical and mathematical computer packages, and the use of database programmes;
- Enter graduate or research careers in analytical fields, with the ability to significantly contribute in a broad range of industries (and moreover to society as a whole) in using skills and education to identify, assess, manage and quantify key findings (e.g., trends, risk, uncertainty) in various situations;
- Understand the privacy, legal and ethical issues associated with the storage and analysis of data.