POSTGRADUATE DIPLOMA (DATA SCIENCE AND ANALYTICS)

Overview

Exit Award only

Students on the MSc (Data Science and Analytics) (https://ucc-ie-public.courseleaf.com/programmes/mscdsa/) programme who pass each of the taught modules may opt to exit the programme and be conferred with a Postgraduate Diploma in Data Science and Analytics.

Programme Requirements

For information about modules, module choice, options and credit weightings, please go to Programme Requirements (p. 1).

Programme Requirements

Code	Title	Credits
Students take **60** credits as follows - all listed core modules (**30** credits) and **30** credits of elective modules:		
Core Modules [1]		
CS6405	Datamining	5
CS6421	Deep Learning	5
ST6030	Foundations of Statistical Data Analytics	10
ST6033	Generalised Linear Modeling Techniques	5
CS6408	Database Technology [2]	5
or CS6503	Introduction to Relational Databases	
Elective Modules [1]		
Students take modules to the value of **10** credits from the following CS modules:		30
CS6506	Programming in Python [3]	
CS6507	Programming in Python with Applications [3]	
CS6422	Complex Systems Development [3]	
CS6423	Scalable Computing for Data Analytics [3]	
Plus modules to the value of **20** credits, with at least **10** credits of ST (Statistics) modules, from the following:		
CS6322	Optimisation	
CS6409	Information Storage and Retrieval	
CS6420	Topics in Artificial Intelligence	
CS6426	Data Visualization for Analytics Applications	
ST6034	Multivariate Methods for Data Analysis	
ST6035	Operations Research	
ST6036	Stochastic Decision Science	
ST6040	Machine Learning and Statistical Analytics I	
ST6041	Machine Learning and Statistical Analytics II	
Total Credits		**60**

1 All selections are subject to approval of the programme coordinator.

2 Students who have adequate database experience take CS6408. Students who do not have adequate database experience take CS6503

3 Students who have adequate programming experience can take CS6422 and CS6423. Students who do not have adequate programming experience can take CS6506 and CS6507

Examinations

Full details and regulations governing Examinations for each programme will be contained in the *Marks and Standards Book* and for each module in the *Book of Modules*.

Programme Learning Outcomes

Programme Learning Outcomes for Postgraduate Diploma in 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;
- 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;
- 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.