



DATA SCIENCE
INSTITUTE

Internationally Accredited Data Science Programme

MSc in Data Science

Data Science Education and Certification

MSc in Data Science

Course Overview

The MSc in Data Science is an advanced 90 ECTS programme that equips students with key skills in programming, data management, and applied analytics. Through a blend of core modules and an Applied Data Science Project, learners apply advanced techniques to real-world challenges across business and research contexts.

The programme includes live workshops, coding sessions, and case studies that develop strong problem-solving and technical capabilities. Students may enter directly into the MSc or progress from a completed Postgraduate Diploma, gaining the knowledge and experience needed to advance in data-centric roles across industries.

The MSc in Data Science will enable you to:

- Develop comprehensive analytics skills, from exploratory data analysis to advanced methods in predictive modeling, machine learning, time series, and text mining
- Strengthen your statistical expertise, gaining a robust understanding of inference, hypothesis testing, and parametric/non-parametric techniques
- Learn and apply diverse programming languages (Python, R, SQL) to manage large datasets, build models, and derive actionable insights
- Handle real-world business and social challenges, integrating cutting-edge analytics to inform decision-making and optimize outcomes
- Enhance scientific communication, effectively conveying technical results and recommendations to both specialized and general audiences
- Engage in research-driven problem-solving, culminating in an applied practicum that demonstrates independent study, critical thinking, and domain-specific knowledge

Who Should Take This Course?



Aspiring Data Science Professionals

Individuals who have foundational analytics skills but want a deeper dive into advanced modeling techniques, machine learning, and research-focused projects



Experienced Analysts & Statisticians

Professionals seeking to broaden their expertise with state-of-the-art methods in time series analysis, text mining, and multivariate techniques



Technical Leaders & IT Specialists

Those looking to integrate high-level data science solutions into organizational strategies, leveraging big data technologies and complex modeling approaches



Researchers & Academics

Scholars aiming to conduct robust, data-driven research and contribute innovative solutions in fields ranging from economics to social sciences



Industry Experts & Consultants

Domain-focused professionals who wish to harness advanced data science tools for strategic insights, improved decision-making, and competitive advantage

Entry Requirements

Academic Entry Route

We invite candidates with a strong foundation in numerate or analytical disciplines to join our advanced data science programs. Typically, this includes:

- **A 2.1 honours degree** (or international equivalent) in a numerate/analytical discipline
- Preferred fields such as Mathematics, Statistics, Computer Science, Engineering, Physics, Sciences, Economics, or quantitative Business Studies
- Consideration of alternative qualifications for those demonstrating sufficient quantitative or analytical skills

Alternate Entry Route

Designed for professionals with relevant experience and/or non-degree qualifications, this route offers an opportunity to advance in data science. Candidates must demonstrate:

- **Recognised Prior Learning (RPL):** Minimum of Six years' relevant professional experience
- **Performance-Based Assessment (PBA):** Provisional admission, requiring a GPA of 90% or higher in the first two course modules for full acceptance

How to Apply and further information

Course applications can be submitted on our website at:
www.datascienceinstitute.net/masters-in-data-science
Along with your application, please submit:

Curriculum Vitae (CV)
Educational Certificates

Non-native English speakers must provide evidence of language proficiency equivalent to IELTS 6.5 or higher.

For further information:

Phone: +353 21 204 0519

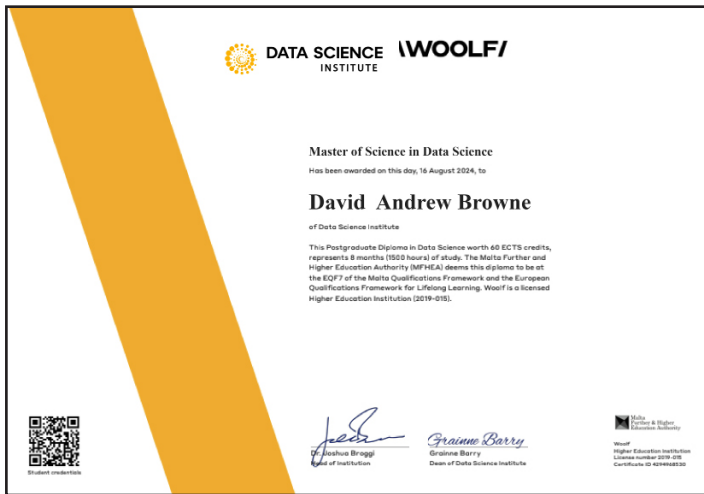
Whatsapp: +353 89 973 5641

Email info@datascienceinstitute.net

Accreditation

The Data Science Institute's postgraduate programmes in Data Science, Machine Learning, and AI are fully accredited by Woolf University in Malta and award internationally recognized ECTS credits. Designed to meet rigorous academic standards, they not only equip you with advanced skills for a competitive job market.

Accreditation and ECTS Credits

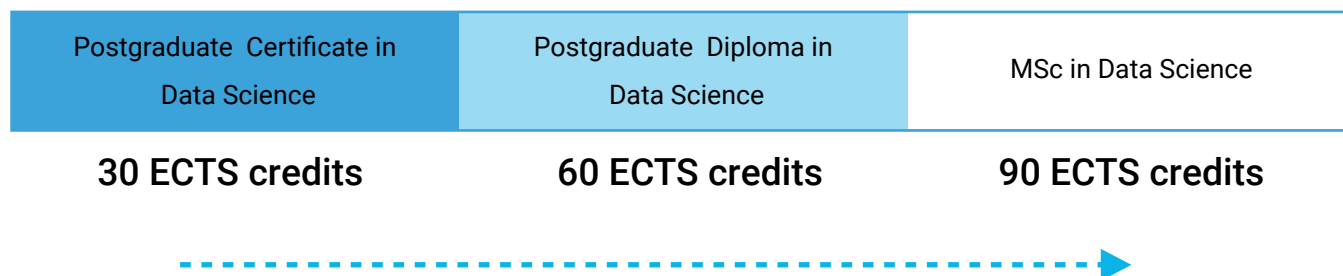


Underpinning these programmes is the European Credit Transfer and Accumulation System (ECTS), a standardized framework that assigns one credit for approximately 25–30 hours of student workload. Recognized by universities and employers worldwide, ECTS enhances the portability of your qualification and facilitates further education or professional advancement.

Academic Pathways

Through structured academic pathways, students can progress seamlessly from postgraduate certificates to diplomas and ultimately to a master's degree, securing a credential widely respected by employers and institutions. Woolf accreditation ensures the credibility of your qualification, while ECTS credits offer global transferability and transparency of learning outcomes.

Postgraduate Pathway to MSc in Data Science



Industry-Aligned and Academically Accredited

Industry Focus

At the Data Science Institute, our programmes and certifications blend real-world relevance with rigorous academic standards, ensuring that graduates earn qualifications recognized across sectors. Guided by an active Industry Advisory Board of senior professionals, our curriculum remains on the cutting edge of evolving technologies and workforce needs.



Academically Accredited

At the Data Science Institute, all our programmes and certifications are not only industry-driven but also academically accredited, ensuring that learners gain recognised qualifications that carry value across sectors. Our offerings are co-developed with input from industry experts and aligned with academic standards, so learners benefit from both real-world relevance and rigorous quality assurance.

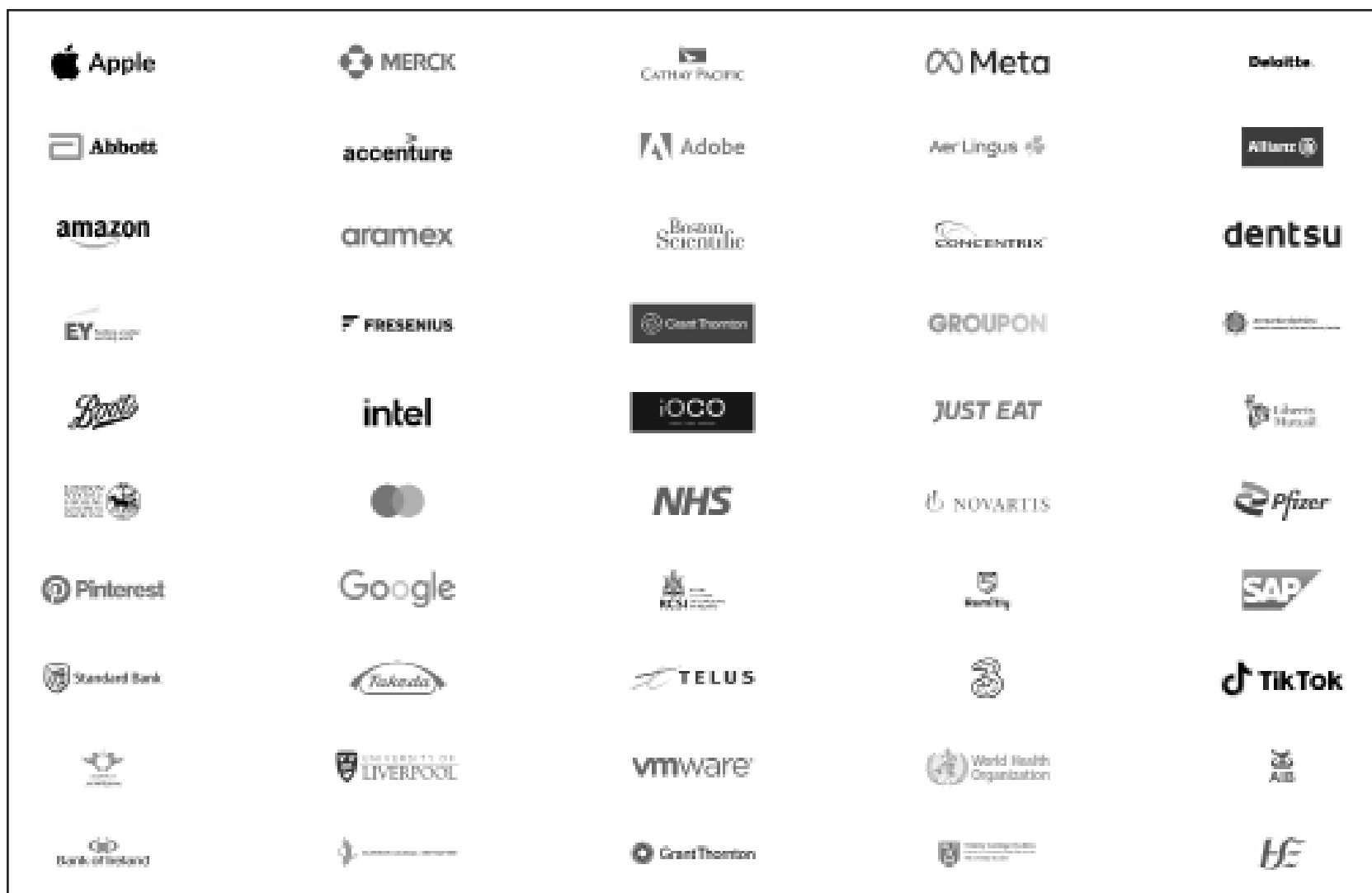
Our Faculty

Our faculty members bring extensive, hands-on experience from diverse fields such as finance, healthcare, manufacturing, and technology. Having worked with leading global organizations, they combine practical insights with academic expertise to deliver an education that is both industry-informed and forward-thinking.

Our Students and Graduates

Our students come from varied professional and academic backgrounds, progressing into roles ranging from Data Scientists and Cybersecurity Specialists to Management Consultants and Researchers. They represent multiple nationalities and work for a wide array of employers, including large corporations, research institutes, and innovative startups. Whether just starting out or making a career pivot, all share a commitment to applying data-driven approaches that create meaningful impact across industries.

Some of the organisations our students and graduates work at



Programme Modules

Module 1: Exploratory Data Analysis

Most industry analysis starts with exploratory data analysis and a thorough study of this will help you to perform data health checks and provide initial business insights. You will gain a sound understanding of Python and R programming, descriptive statistics, data management and data visualisation. You will also learn SQL for big data pre-processing and prepare data for big data analytics. The module serves as an essential foundation for advanced analytics taught later in the course.



Exploratory Data Analysis

Programming in Python, R and SQL
Data management
Measures of central tendency and variation
Bivariate relationships
Data visualisation

Module 2: Statistical Inference

Statistical inference is the process of drawing inferences or conclusions from data using statistical techniques. This is at the core of data science, and a strong understanding of statistics from the beginning is the prime ingredient for a competent data scientist. In this module, you will cover sampling, statistical distribution, hypothesis testing, and variance analysis and use R code to carry out various statistical tests and draw inferences from their output.



Statistical Inference

Principles of statistical inference
Parametric tests
Non-parametric tests
Analysis of variance (ANOVA)

Module 3: Fundamentals of Predictive Modelling

Solutions to many business problems are related to successfully predicting future outcomes. This module introduces predictive modelling and provides a foundation for more advanced methods and machine learning. You'll gain an understanding of the general approach to predictive modelling and then build simple and multiple linear regression models in Python and R and apply these in a range of contexts.



Fundamentals of Predictive Modelling

Predictive modelling principles
Linear regression models
Model validation
Python and R packages for predictive modelling

Module 4: Advanced Predictive Modelling

In this module, you are introduced to model development for categorical dependent variables. Binary dependent variables are encountered in many domains such as risk management, marketing and clinical research and this module covers detailed model building processes. Multinomial and ordinal logistic regression are also covered.



Advanced Predictive Modelling

Logistic regression models
Survival analysis
Cox regression
Poisson regression

Module 5: Time Series Analysis

In this module, time series forecasting methods are introduced and explored. You will analyse and forecast macroeconomic variables such as GDP and inflation, as well as look at complex financial models using ARCH and GARCH, ARIMA, time series regression, exponential smoothing and other models.



Time Series Analysis

Time Series concepts
Assessing stationarity
ARIMA, ARCH, GARCH modelling
Panel data regression

Module 6: Unsupervised Multivariate Methods

Data reduction is a key process in data science and you will learn to apply data reduction methods such as principal component analysis, factor analysis and multidimensional scaling. You will also learn to segment and analyse large data sets using clustering methods, another key analytical technique that brings out rich business insight if carried out skillfully.



Unsupervised Multivariate Methods

Principal Component Analysis
Factor Analysis
Multidimensional Scaling
Cluster Analysis

Module 7: Machine Learning 1

Machine learning algorithms are new generation algorithms used in conjunction with classical predictive modelling methods. In this Machine Learning 1 module, you will understand applications of the support vector machine, K nearest neighbours and naive bayes algorithms for classification and regression problems using case studies from a range of industries and sectors.



Machine Learning 1

Naive bayes
Support Vector Machines
K nearest neighbours

Module 8: Machine Learning 2

The Machine Learning 2 module continues developing your machine learning knowledge and you will cover decision tree, random forest and neural network algorithms for regression and classification, again drawing on case studies from real world data. You will have the opportunity to compare the performance of machine learning algorithms against classical statistical models and learn to assess which are most appropriate for specific scenarios.



Machine Learning 2

Decision Tree
Random Forest
Association Rules
Neural Networks

Module 9: Text Mining and Natural Language processing

This module looks at analysing unstructured data such as that found social media, newspaper articles, videos and more. In particular you will look at methods for text mining and natural language processing using R and Python code to produce graphical representations of unstructured data and carry out sentiment analysis.



Text Mining and Natural Language processing

Structured and unstructured data
Text mining in R and Python
Natural language processing

Module 10: Data Science in Practice

The Data Science in Practice module provides you with an opportunity to your apply knowledge through project work. You will select a project from a specific domain and appropriately apply exploratory data analysis, statistical methods and select appropriate advanced modelling techniques. This module also develops your scientific communication skills through the preparation of project reports and presentations.



Data Science in Practice

Presentation and communication skills
Synthesis of data science knowledge
Application to real world data and scenarios

Module 11: Applied Data Science Practicum

This Postgraduate Major Project completes the MSc Data Science and students choose a problem from a particular business or social domain. They have the option of working on a real-world problem from their own organisation and work with a mentor in conjunction with their course supervisor.

Students are required to solve a research problem that involves carrying out exploratory data analysis, hypothesis testing, research design and use a range of classical and/or modern machine learning modelling methods to predict outcomes and provide actionable insights and recommendations. In doing so they will apply technical capabilities together with research skills and critical thinking. A key part of the project is to communicate the output of the student's research to both technical and non-technical audiences through written, verbal and visual means.



Applied Data Science Practicum

Critical and creative thinking
Application of technical expertise
Scientific communication
Research skills

Course Delivery

We employ a structured approach that balances theoretical foundations with practical application, ensuring participants gain both the critical knowledge and experiential skills necessary for professional advancement.

Cohort-Based and Supportive Learning Environment

Our cohort-based model enables participants to progress together, fostering mutual support, shared experiences, and peer-to-peer learning. Through collaborative discussions and group problem-solving, this structure enriches both academic growth and real-world preparedness.

Flexibility and Engagement

Our programmes accommodate diverse time commitments, allowing participants to balance scheduled, instructor-led sessions with hands-on, interactive activities. This blend of structured teaching and practical work facilitates a deeper engagement with course materials and methods.

Course Features



Flexible Schedules

Balance live, instructor-led sessions with self-paced content for an adaptable learning experience



Learning Platform

Access recorded live sessions, structured course materials, and supplementary resources at any time.



Discord Channel

Stay connected with peers and instructors through real-time updates, feedback, and collaborative tools.



One-to-One Tutorials

Receive individualized guidance to address specific learning objectives or areas of interest.



Group Projects:

Collaborate on authentic case studies, enhancing teamwork, problem-solving skills, and applied knowledge.



Live Concept Classes and Hands-On Workshops

Participate in synchronous classes led by expert instructors to build foundational and advanced competencies. Reinforce learning through practical coding and modelling exercises that simulate real-world scenarios.

Data Science Institute

The Data Science Institute is dedicated to providing academically accredited education and professional certifications in data analytics, data science, artificial intelligence, and machine learning.

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