

TU253R



Applied Data Science and Analytics

MSc Applied Data Science and Analytics
Postgraduate Certificate in Applied Data Science and Analytics
Certificate in Applied Data Science and Analytics
Certificate in Applied Data Science and Text Analytics
Micro credential in Data Science Algorithms

Overview

TU Dublin's MSc in Applied Data Science and Analytics was Europe's first online masters in data science at its launch in 2010. Since then, it has gained a significant reputation as a high quality, challenging and very rewarding programme with a practical focus relevant to industry contexts. The immersive and transformative 2-year online, part-time, MSc is designed to accelerate your career in data science while fitting with a busy schedule. The programme's modules amalgamate around a robust data science methodology, allowing integrated coursework that emphasises both mathematical rigour, and data science models that generate actionable insights. It is ideal for individuals working with, or with access to, data in a real context that allows project work to bring relevance to their day job. Key points:

- Designed for professionals on a data science career path
- High completion rates
- One to one supervision in first year and second year of the programme
- International network of students
- Alumni network of senior data science professionals
- High quality course work commensurate with peer reviewed publications

The programme has attracted cohorts of students that are highly motivated and work to a high standard. It was shortlisted for Grad Ireland's Post Grad of the Year awards a number of times. Enrolment numbers are kept small to maintain the quality of the course. While 83% of our graduates live in Ireland, we have had graduates complete the MSc from Canada, Germany, Greece, India, Malta, Netherlands, South Africa, Thailand, UK, USA and Zimbabwe. The average age of participants is 38, evidencing a teaching practice and delivery mode that successfully targets continuing education and lifelong learning.

Graduates have been hired as data scientists across a variety of industry sectors and companies including: Ericsson, IBM, Microsoft, PayPal, Intel, O2, Vodafone, Aer Lingus, Ryanair, Emirate Airlines, Dublin Airport Authority, GlaxoSmithKline, Mallon Technologies, Bank of Scotland, Arvato Finance Solutions, Sky Ireland, Eir, VHI Healthcare, United Healthcare Group, Accenture, SAP, FBD Insurance, Deutsche Bank, Ulster Bank, IBM and many others. Those working in the public sector included employees with MABS, GMS Payments Board, Dun Laoghaire – Rathdown Public Library Service, Dublin City Council, Intelligent Transport Systems, Higher Education Institutions and An Garda Síochána.

Course aims: The course focuses on the knowledge and skills to select, apply and evaluate data science and big data analytics techniques to discover knowledge that can add value to a company. Students will gain both an in-depth theoretical understanding and practical hands-on experience, including implementing novel and emerging techniques. Participants will be kept abreast of current research and state of the art in data science related topics.

Féidearthachtaí as Cuimse
Infinite Possibilities

Core Modules

Semester 1	Business Intelligence BI architecture, BI front-end, Data privacy and ethics; Business Intelligence and Data Mining methodologies, and the Business Intelligence life cycle.	Data Science Algorithms Standard Data Mining algorithms for descriptive modeling, classification, clustering, prediction, sequence analysis and association analysis.
Semester 2	Data Pre-Processing and Exploration Data visualisation; Descriptive Statistics; Data Cleaning; Transforming data in preparation for data mining;	Data Science Applications Project module: Complete a data science project to meet a business objective.
Additional electives, students can select two electives:		
Semester 3	Text Analysis and Web Content Mining Natural Language Processing techniques to extract data from unstructured text. Mining data from unstructured text.	Geospatial Data Mining and Knowledge Discovery Data Mining techniques and algorithms for mining data from Geographic Information Systems.
	Programming for Big Data The algorithms and challenges for processing large datasets; students will need fundamental knowledge and skills in computer programming.	Statistics The learner will cover the fundamental ideas of probability and descriptive statistics, moving on to hypothesis testing and the design of experiments
Semester 4	Research Project which can be industry based	



Semester Breakdown

Semester 1: Sept - Jan
20 credits, 2 taught modules.

Business Intelligence

Algorithms for Data Science

Semester 2: Feb-May
20 credits,
2 taught modules.

Data Exploration
& Preprocessing

Data Science
Applications (Project)

Semester 2: Feb-May
10 credits,
1 taught module.

Data Exploration
& Preprocessing

MSc Research
Project Proposal

Semester 3: Sep-Jan
20 credits,
2 taught modules,
Selected from below electives:

- Text Analytics & Web Content Mining
- Programming for Big Data
- Statistics
- Geospatial Data Analytics & Knowledge Discovery Mining

Semester 3 & 4: Sep-May
60 credits,
Continue Research Project

MSc Research Project
60 credits

Semester 4: Feb-May
Research Project.
MSc Research Project
30 credits

Semester 4: Convert to a research
MSc/PhD.

Pathway 1

6 Taught Modules & 30 credit Research Project

Pathway 2

3 Taught Modules & 60 credit Research Project

Semester 3 to 12: Sep-May
Continue Research Project

PhD Research Project- 290 credits
with at least 3 annual evaluations
(each worth 15 credits)

Additional elective modules can also be
taken if relevant.

Pathway 3 PhD Program

MSc Program

PhD Program

Term	Subject	MSc in Applied DS and Analytics	PG Cert in Applied DS and Analytics	Cert in Applied DS and Analytics	Cert in Applied DS and Text Analytics	Micro credential in Algorithms for Data Science	
Sept - Dec	Business Intelligence	✓					
Sept - Dec	Algorithms for Data Science	✓	✓	✓	✓	✓	
Sept - Dec	Text Analytics and Web Content Mining	✓	E		✓		
Jan - May	Data Exploration and Pre-processing	✓	✓	✓			
Jan - May	Data Science Applications	✓	E				
Jan - May	Programming for Big Data	E					
Jan - May	Statistics	E					
Jan - May	Geospatial Data Mining and Knowledge Discovery	E					
Jan - Aug	Research Project	✓					
E: elective choice		Duration: 2 years; 2 nights per week		1 year; 2 nights per week	1 year; 1 night per week	Sept - Jan; 2 nights per week	Sept - Jan; 1 night per week
Qualifies for fee subsidy of 80%			Y	Y	Y	Y	

Testimonials

'This MSc program is rigorous and has provided me with not only a greater understanding of the data science world but also greater scientific mindset. It has given me the skills needed as a data scientist and led me to my current diversified and very successful business activities. My experience at TU Dublin has turned into a journey I never thought possible, and I could not be more thankful for.' **Spiros Paraskevas**

'An excellent course that transformed an interest into enhanced career choices. Without doubt, it was the best professional decision I have ever made.' **Andrew Chisholm**

'This MSc in Applied Data Science and Analytic is a very forward-looking programme. The coursework in this curriculum is very practical enabled me to apply real-life problem. I am very thankful to TU Dublin for creating this programme and also thankful for both Markus and Geraldine for their wonderful teaching and advice.' **Jirapon Sunkpho**

'I found the course really helped me to dig deeper into a wide range of DS algorithms and processes in a way that I had not done before. While working on DS in a working environment tends to result in just getting enough of an idea to get the job done, this course has provided the opportunity and discipline to deepen my understanding. It has also broadened the range of techniques and applications beyond those that I was previously aware of.' **Pat Tyrrell**

'The MSc in Applied Data Science and Analytics provides invaluable practical working experience by focusing on the core topics that are needed to fundamentally underpin a successful career in data. The interdisciplinary scope and high standards of teaching and research enables students to explore a wide range of theoretical and methodological approaches to solving critical problems using analytics. The online aspect was an added bonus as it allowed me to work full-time while completing my studies - this was only made possible because of the incredibly knowledgeable and engaging teaching and supervising team. I highly recommend the course for anyone considering a career in data.' **Elaine Kirwan**

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