



Ollscoil Chathair
Bhaile Átha Cliath
Dublin City University



BSc Data Science – INTRA Programme (DC123)

Overview

The BSc Data Science offers a combination of programming, mathematics, communication and analytics skills that creates valuable insight and professional expertise. The degree has been developed in close collaboration between DCU, global centres of research excellence (Insight, ADAPT) and major industry partners. The objective of this degree programme is to produce graduates who:

- Are equipped with the knowledge and abilities to apply the full spectrum of computing and analytics to real world data issues
- Have a unique combination of mathematics, statistics, computing and communication skills
- Understand fundamental and applied machine learning, artificial intelligence, data mining and data analytics and how these tools are used in a range of application domains including finance, health, media and natural language processing
- Can participate in data science teams and communicate effectively to other team members
- Think creatively to solve challenges using data-driven techniques

Programme Outline

Year One: Students study fundamentals in mathematics, statistics, programming and databases (SQL), and get a taste of the world of data analytics.

Year Two: Continuing study of statistics and multivariate calculus. More detailed study of data, programming in both Python and R, machine learning, visualisation and data engineering, warehousing and mining.

Year Three: Students explore graph databases, professional skills and practical applications are employed involving large data sets and complex problem solving using real world scenarios in domain specific data science pods. The second half of year three is the INTRA placement with data science teams in data-driven organisations.

Year Four: The latest developments in programming for large and distributed data problems, computational modelling, advanced machine learning and natural language technologies will be studied and students complete an individual project in the data science arena.

Work Experience

Students from the BSc Data Science will have the ability to work in many computing roles, some of which are listed here:

- Data Scientist
- Business Intelligence Analyst
- Customer Insights
- Knowledge Engineer
- Risk Analyst
- Data Programmer
- Real time data processing
- Software Engineer
- Machine Learning and AI



Relevant Work Experience

INTRA (INtegrated TRaining) work placements Relevant work experience through DCU's internship programme "INTRA" (INtegrated TRaining) is a mandatory element of the BSc Data Science. Students are required to complete an 8 month INTRA placement at the end of third year, from February to September. INTRA Vacancies will be advertised every year from October to the end of January.

Students are available for interview from October onwards. For more information, contact:

INTRA Unit, Student Support & Development, DCU, Glasnevin, Dublin 9. Ireland.

T: +353 1 700 5515

E: maeve.long@dcu.ie

W: dcu.ie/intra

 [in/dcu-intra-office](https://www.linkedin.com/company/intra-dcu)



Year 1	Year 2	Year 3	Year 4
Computer Programming (Python)	Computer Programming 3 (Data Structures and Algorithms)	Data Exploration Using Graph Theory	Application Domains 2
Data Science and Databases	Computer Programming 4 (Object Oriented Programming)	Professional and Research Practice for Data Science	Advanced Machine Learning
Collaboration and Innovation	Statistics	Software Engineering: Building Better Software	Data Analysis at Speed and Scale
Digital Innovation Management and Enterprise	Calculus of Several Variables	Search Technologies	Building Complex Computational Models
Linear Mathematics	Data Processing and Visualization	Application Domains 1 (e.g., finance, health, education)	Natural Language Technologies
Calculus	Data Warehousing and Data Mining	INTRA	Application Domains 3
Probability	Introduction to Machine Learning	INTRA	Final Year Project
	Programming for Data Analysis (R language)		