MSc Data and Computational Science Orientation

Dr Lennon Ó Náraigh
School of Mathematics and Statistics
University College Dublin
Belfield, Dublin 4

30th August 2024

Version History:

First version: 30th August

There are 9 modules (45 credits) which are core for the programme and must be taken by all students. An additional 15 credits must be selected from the list of option modules. These 60 credits will cover the first two trimesters. For the third (summer) trimester there are two streams, described below.

Each module has an online **module descriptor** which can be found by web search. The module descriptor gives information about the module content, mode of assessment, and module coordinator (who is usually the lecturer). **The module coordinator is the main contact point for any queries you may have about a module.**

For example, for MATH40550, the page looks like this:

Core Modules – Take 45 Credits of Core Modules

Trimester	Module ID	Title	Credits
Autumn	MATH40550	Applied Matrix Theory	5.00
Autumn	STAT20230	Modern Regression Analysis	5.00
Autumn	STAT30340	Data Programming with R	5.00
Autumn	STAT40800	Data Prog with Python (online)	5.00
Autumn	STAT41040	Principles of Prob & Stats	5.00
Spring	ACM40990	Optimisation in ML	5.00
Spring	ACM41000	Uncertainty Quantification	5.00
Spring	STAT40150	Multivariate Analysis	5.00
Spring	STAT40850	Bayesian Analysis (online)	5.00

Option Modules in Autumn / Spring – Take 15 Credits of Option Modules in Autumn and Spring

Option Modules

Trimester	Module ID	Title	Credits	
A)3OF: (Option modules)				
Students must take 15 credits				
Autumn	ACM40290	Numerical Algorithms	5.00	
Autumn	ACM40660	Scientific Programming (ICHEC)	5.00	
Autumn	STAT40400	Monte Carlo Inference	5.00	
Spring	ACM40640	High Performance Comp. (ICHEC)	5.00	
Spring	STAT30250	Advanced Predictive Analytics	5.00	
Spring	STAT30270	Statistical Machine Lrng	5.00	
Spring	STAT40970	Machine Learning & AI (online)	5.00	

Summer Programme – Stream 1

A research stream, consisting of a research project with thesis. This is best suited for students interested in pursuing further studies (i.e. a PhD). There may be limited capacity in this stream.

Students complete a dissertation under academic supervision			
Summer	ACM40910	Research Project II	30.00

Initially, students will not have the option to register for Stream 1. During the autumn trimester, any interested students will be invited to apply to undertake Stream 1. Stream 1 consists of a full-time research project under the supervision of a member of academic staff. The research project is intensive, and research students will be expected to work full time on their project for the duration of the summer trimester (late May – end of August). The project will be

assessed on the basis of a final written thesis, among other assessment elements. The research projects must be in an area where a suitable supervisor is available, and consequently, there may be a limit on the number of positions available in the research project stream. An indicative list of projects with suitable supervisors will be made available in advance of the application deadline. Students interested in taking the research stream must apply for consideration. The application will consist of a brief (no more than one page) statement of interest, which should be submitted to the module coordinator for ACM40910 during the autumn trimester. Applications will be reviewed by a committee consisting of academic staff, and will be assessed on the basis of first semester grades and the student's suitability for one of the available research projects. Students will be informed of the outcome of their application by the start of the spring trimester and the School of Mathematics and Statistics office will subsequently register those who are selected to the research project module.

Summer Programme – Stream 2

A combination of mini-projects and a choice of taught modules, with a flexible timetable. This is best suited for students intending a career in industry.

C)1OF: (Stream 2 core)
Students on Stream 2 must complete this core module

Summer	ACM40960	Projects in Maths Modelling	15.00	

D)3OF: (Stream 2 options)
Students on Stream 2 must take 15 credits from this option list

Summer	STAT40780	Data Prog with C (online)	5.00	
Summer	STAT40810	Stochastic Models (online)	5.00	
Summer	STAT40830	Adv Data Prog with R (online)	5.00	
Summer	STAT40840	Data Prog with SAS (online)	5.00	
Summer	STAT40950	Adv Bayesian Analysis (online)	5.00	
Summer	STAT40960	Stat Network Analysis (online)	5.00	

Module Registration

Students will normally register to modules online through their UCD Connect account. This must be done within the first three weeks of the trimester in which the module is running. In exceptional circumstances (e.g. dropping a module late in the trimester), students must complete the module registration form (available by contacting the office of the School of Mathematics and Statistics) and submit it electronically to the same. Requests to register to a module after week three of the trimester in which it is offered are not guaranteed to be approved and will require consultation with the module coordinator. Requests to register to a module after week six will not be considered.

Changes to Registration

You might have taken the equivalent of one or two of the core modules before – in this case, modules may be substituted. For these purposes, **students are invited to look in the first instance at option modules not already selected.** After that, students should look to other

appropriate stage-4 modules in the School of Mathematics and Statistics. Students should discuss these choices with the programme. The final registration change will be carried out by programme administrator in the office of the School of Mathematics and Statistics.

General guidelines

Important dates

The UCD Academic Calendar includes the key dates to keep in mind for the academic year. All lectures will be delivered during the teaching portion of each trimester. Results will be released following the timeline in the Assessment Key Dates calendar. Students who require confirmation that they have finished their MSc in advance of receiving their final results may request a letter confirming their status from the School of Mathematics and Statistics office once they have completed all modules and the office has received confirmation that they have passed all components of the MSc.

Plagiarism policy

All work submitted by students for assessment must be a reflection of their own work. Unacknowledged inclusion of another person's work (whether from another student or elsewhere) will be penalised in line with the University plagiarism policy. As part of this policy, all students should include a completed Assessment Submission Form with all assignment submissions.

Queries

Queries in regards to any specific module (e.g. requesting feedback on assessment or queries in relation to difficulties with the module) should be directed to the module coordinator. The module coordinator for each module is listed on the module descriptor page, which is accessible by clicking on the module code in the above tables. Contact details for all staff members are available from the UCD Directory.

Administrative queries (e.g. module registration) should be directed to the School of Mathematics and Statistics administrative staff. They may be contacted by email at the dedicated address: dataandcomp@ucd.ie.

Other academic queries in relation to the programme may be directed to the Academic Programme Director, Dr Lennon Ó Náraigh, by email to onaraigh@maths.ucd.ie or (by prior arrangement) via office hours.