Queen Mary University of London
School of Mathematical Sciences

MSc Data Analytics

Induction Information

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Please note that some information in this document is provisional and may change

Welcome

A warm welcome to Queen Mary…

… and the Data Analytics MSc!

We are delighted that you have chosen to join us!

Welcome

Over the next 12 months we will help you to develop the knowledge and skills necessary to analyse data from a variety of sources

Popular techniques change - but understanding the underlying principles will help you stay current beyond the program

Our extra-curricular activities will help to boost your competitive advantage when applying for jobs.

Agenda

1. (some) Key persons
2. The MSc programme
3. QMplus
4. Facilities
5. Professional development and career planning
6. Cheating and plagiarism
7. Support and guidance

Some further general information will be given at various other talks later today

Note: The **MSc Student Handbook** also contains a lot of information on many of these topics, and will be available online shortly

(some) Key Persons

Dr Nicola Perra – Responsible for day-to-day management of the programme – For some of you, also your advisor — supporting your studies and offering you advice

Dr Oscar Bandtlow, Director of Postgraduate Taught Programmes

Dr Sebastian Del Bano Rollin, Excel certifications, etc.

Ms Sajida Rahman, Student Support Officer

Ms Andrea Pinner, Careers Consultant for SMS

Programme Overview

Eight taught modules (each worth 15 credits)

Semester A

- Three compulsory
- Choice of programming module

Semester B

- Four choices (with a few restrictions)
- You can change this after this semester

Project and dissertation (worth 60 credits)

Programme Overview

For a summary of the contents of each module, please visit:
https://www.qmul.ac.uk/maths/postgraduate/taught-programmes/msc-data-analytics/modules/

You can also check QMPlus
(not all modules for Semester B will be available)

Programme

Semester A

Compulsory Modules

- MTH794 Probability and Statistics for Data Analytics
- MTH786P Machine Learning with Python
- MTH765P Storing, Manipulating, and Visualising Data

Elective Modules

- MTH739P Topics in Scientific Computing
- MTH766P Programming in Python

Programme

Semester B

Elective Modules

- MTH6139P Time Series
- MTH741P Digital and Real Asset Analytics
- MTH750P Graphs and Networks
- MTH767P Neural Networks and Deep Learning
- MTH776P Bayesian Statistics
- MTH793P Advanced Machine Learning
- MTH791P Computational Statistics with R
- MTH792P Financial Data Analytics
- MTH782P SAS for Business Intelligence*
- MTH783P Time Series Analysis for Business*
- MTH784P Optimisation for Business Processes*

Students can take at most **2 modules** with a *

Only one time series module allowed

Electives

Module choices must be made via the student information system **mySIS**:

http://mysis.qmul.ac.uk

(Log in using your Queen Mary username and password.)

Note: You

- have until the end of the second week of this term to make your choice.
- can change your choices at the start of next term
- can discuss your selection with your academic advisor and/or me

This Semester

Choose a programming module:

- MTH766P Programming in Python
- MTH739P Topics in Scientific Computing

Depends on you programming experience

Some Logistics

Assessments

The method of assessment varies

Some modules are assessed purely by in-term class tests, examination or both

Examinations are semester based (January and May)

Some Logistics

Attendance

All material will be available online, but we expect students to be physically present on campus

Some Logistics

Resitting a module

If you fail a module, then you will have one opportunity to resit it later in the year

Your mark on this module will then be capped at 50%

Project and Dissertation

Your project is…

1. An opportunity to undertake some significant advanced study in an area of interest to you, under the guidance of an expert
2. Assessed by a dissertation (up to 60 pages) which you submit in early September.
3. Worth 60 credits (one third of the total marks for your MSc degree).

Many projects involve a substantial amount of programming and analysis.

Project and Dissertation

Examples

- Spatial distribution of crime statistics
- Analysis of sports data (basketball, football, etc.)
- Analysis of satellite images
- Tracking news articles
- Portfolio Optimisation
- Hardening techniques for deep neural network image classifier
- Applications of category theory for data science
- many others…

Project and Dissertation

At end of Semester A (or early Semester B)

- You will receive a list of available topics and supervisors
- You will have the opportunity to discuss with potential supervisors
- Topics then allocated based on your preferences
- More information to come

Project and Dissertation

In Semester B

- Start introductory work on project, e.g., undertake literature review
- Learn any programming tools that you'll need
- Learn LaTeX (the word-processing program used to produce your dissertation)

Project and Dissertation

In Semester C

- Full-time work on project (600 hours = 40 hours per week from start of June to early September)
- Regular meetings with supervisor
- Submit dissertation in early September 2022 (date to be confirmed)

QMPlus

Queen Mary's online teaching and learning environment

http://qmplus.qmul.ac.uk

(Log in using your Queen Mary username and password.)

- Lecture notes, coursework assignment sheets, syllabuses, past exam papers, etc. for all your module
- The Student's Handbook and other important information about the programme
- General information
- Links to third-party resources that may be of interest to you.
- Submit class test assignments, your project dissertation, etc.

MySIS

Administrative portal

http://mysis.qmul.ac.uk

(Log in using your Queen Mary username and password.)

Primary Use: Choosing modules

Facilities

MSc Computer room

- Dedicated computer room for MSc students in SMS
- **Location:** MB303
- High-specification PCs with NVidia graphics cards for parallel processing
- MS Office (Word, Excel/VBA), LaTeX, C++, Mathematica, Matlab
- Access to online research journals (needed for your project)

Facilities

Bloomberg Terminals

In this room you will also find a number of Bloomberg terminals (third-party computer system providing analytics and market data)

Bloomberg is widely used in investment banks, and so you should aim to become familiar with how to use it as soon as possible. You may also need to use Bloomberg for your project.

Note: The first time that you use Bloomberg, you will be asked to set up a separate username and password for future use

Facilities

Libraries

- The QMUL library has a wide range of books on maths, finance and computing.
- You also have access to other libraries in the University of London.

There will be a short talk later today with some more details.

Software. Queen Mary students are able to obtain subsidised (or sometimes free) copies of commercial software, such as Mathematica, for use on your own computer.

Please visit http://www.its.qmul.ac.uk/services/students/index.html

Online Facilities

AppsAnywhere and Library

Almost all the software (except Bloomberg terminals) available in the computer lab

Electronic resources available through library: article, books, etc.

You also have access to other libraries in the University of London

Professional Development

In addition to the taught part of the programme and the project, we offer a wide range of extra-curricular activities to improve your employability.

It is essential that you make full use of these opportunities

Hint: You should start thinking now about your next career move

Professional Development

Professional Skills Workshops during the year, SMS will be arranging a number of workshops covering various skills useful for

- Your MSc project
- Your future professional career

Professional Development

Examples of topics that may be covered:

- ‘Hard’ skills
  - Programming in Excel, Visual Basic (VBA), Mathematica
  - Document preparation with LaTeX/Markup
- ‘Soft’ skills
  - Career planning, writing your CV, interview skills, professional networking
  - Writing reports, giving presentations

Details to follow later in the year

Microsoft Excel Certification

We also offer the opportunity to obtain the Microsoft Office Specialist (MOS) Excel Certification (specialist or expert level).

Can be handy for the CV

You'll need to register on QMPlus, details to follow.

Other Programming Skills

Software skills are always in high demand from employers.
(Potentially) covered in lectures:

- Python
- R
- C++
- Excel

Other potential avenues to explore:

- CUDA C/C++ or OpenCL (for parallel programming on GPUs)
- Javascript
- SQL
- MATLAB
- …

Hint: Don’t forget to put these skills on your CV!

Practitioner Seminars

SMS and/or other university departments may organise talks given by external speakers.

- Professionals working in data analysis or in academia
  - Talk about the organisations they work for
  - Discuss the work they do
  - Show how academic theory is applied in a wider commercial context

- Chance for you to
  - Ask questions
  - Learn about their own career paths
  - Chat informally (develop personal contacts, network)

Watch out for these events, and be sure to attend!
(Especially since they are now mostly online)

Academic and Industrial Talks

- Institute of Applied Data Science
- Maths, EECS, Physics talks
- Other London universities
- Diversity in Data Science Society

- Dedicated industry talks
  - Importance of networking

Watch out for these events, and be sure to attend!

(Especially since they are now mostly online)

Careers events

There will be a careers talk later today by Ms Andrea Pinner. In addition, the university runs many careers events throughout the year which may be of interest to you, for example:

- CV clinics
- Corporate presentations
- Graduate scheme application inductions

Make full use of all these opportunities.

Cheating and Plagiarism

Cheating

Please **do not ever** be tempted to cheat in any exam or coursework assignment

- The penalties can be very severe
- You could be failed **all** modules and required to resit everything one year later (with a cap of 50% on your grades)
- In the most severe case, you could be expelled from the university
- The process is lengthy and might cause delays to graduation!

Cheating and Plagiarism

Plagiarism

This is passing of somebody else's work as your own, e.g., in a coursework assignment or in the project dissertation.

- It is considered to be a **very serious** form of cheating.
- If you are unsure, then please **ask us for guidance**.

Support and Guidance

It is important that you do not fall behind with your studies

- Attend all lectures and tutorials
- Attempt all coursework assignments
- Ensure that you ask for help as soon as you need it (sooner rather than later)
- All lecturers organise Office Hours where you can drop in to ask questions about anything that you haven't understood

Remember that we are here to support you throughout your time at Queen Mary.

If you have any personal problems (academic, financial, medical, etc.) that affect your studies, then you should discuss them with me (as your advisor) or for non-academic matters Ms Hamida Begum in confidence

Support and Guidance

We hope that everything runs smoothly throughout the year

But if you encounter any problems with the running of the MSc programme, then please let us know as soon as possible so that we can help (especially since this is the first year of the programme):

- For academic issues, please speak to your academic advisor and/or me
- For administrative issues, please speak to the Maths' office

We are always happy to meet with you to provide assistance on any matter related to the MSc programme, or to discuss any other more general issues.

Concluding…

Look forward to getting to know you personally and all the best in the coming academic year…

Questions?

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