PROGRAMME SPECIFICATION

Name, title and level of final qualification(s)	**Graduate Certificate Mathematics** *Additional exit award for specific pathway:* - Graduate Certificate Mathematics and Statistics (Level 6)
Name and title of any exit qualification(s)	N/A
Awarding Body	University of London
Teaching Institution(s)	Birkbeck, University of London
Home Department/other teaching departments	School of Computing and Mathematical Sciences
Location of delivery	Central London
Language of delivery and assessment	English
Mode of study, length of study and normal start month	Part-time (1 year) October
Professional, statutory or regulatory body	N/A
QAA subject benchmark group(s) Higher Education Credit Framework for England	N/A
Birkbeck Course Code	GCGMTHMT_C
HECoS Code	100403
Start date of programme	Autumn 2010
Date of programme approval	Summer 2010
Date of last programme amendment approval	8 March 2021
Valid for academic entry year	**2026-27**
Date of last revision to document	14.10.26

Admissions requirements

The entry requirement is a first degree in a quantitative discipline. In exceptional circumstances candidates without a first degree in a quantitative discipline may be admitted, provided they have equivalent level qualifications or professional experience that convinces the admissions team that the programme is suitable for them. Applicants may be emailed an entrance test to gauge their suitability for the programme.

We welcome applicants without traditional entry qualifications as we base decisions on our own assessment of qualifications, knowledge and previous work experience. We may waive formal entry requirements based on judgement of academic potential.

Course aims

The Graduate Certificate in Mathematics is aimed at students with a first degree in a quantitative discipline, who need or desire to develop specialist knowledge in an area of mathematics, or to “top up” their existing skills. In consultation with the programme director, students will have the opportunity to create a coherent programme of study tailored to their particular needs and interests in Mathematics. The Graduate Certificate can also act as a one year qualifying course for an MSc programme, such as the MSc Mathematics at Birkbeck.

For students entering the programme wishing to take some statistics, the award of Graduate Certificate in Mathematics and Statistics will be available to students taking one mathematics module and one statistics module. The intention of this award is to keep the programme as flexible as possible, and can act as a one year qualifying course for subjects needing both some mathematics and statistics (for example, an MSc in Econometrics).

Distinctive features: Part-time, evening, face to face study. Regular coursework forms a part of all modules, to further develop independent learning. A choice of modules to allow students to pursue their areas of interest. Students can opt to study the module “Problems in Mathematics”, which develops an appreciation of the cultural and historical aspects of the subject and enhances the ability to communicate effectively about the subject.

Course structure

The programme comprises two, year-long, level 6 modules (level 6 roughly corresponds to final year study on a BSc Mathematics). Any level 6 mathematics module running in the year you study is possible. The programme director will offer guidance about the most suitable choices, given experience, prior study and future goals. For example, the module Algebra 2, or Number Theory and Algebra, would be recommended for those wishing to pursue an MSc in Mathematics at Birkbeck.

For the exit award Graduate Certificate in Mathematics and Statistics, students will be required to take one level 6 module from the BSc Mathematics programme, and a level 6 statistics module from the BSc Mathematics and Statistics programme. Specifically excluded is the module combination of Advanced Mathematical Methods and Statistics: Theory and Practice as this module combination is covered by the Graduate Certificate in Statistics. Students wishing to take the pathway leading to a Graduate Certificate in Mathematics and Statistics will need approval from the programme director.

Level	Module Code	Module Title	Credit	Comp Core/ Option	Likely teaching term(s)
Grad Cert Mathematics					
Part-time – 1 year					
6	-	Option from the list of approved modules (indicative list below)	30	Option	T1, 2 or 3
6	-	Option from the list of approved modules (indicative list below)	30	Option	T1, 2 or 3
Indicative List of Option Modules					
6	BUEM021S6	Calculus 3: Transforms & Models	30	option	T1 + T2
6	BUEM124H6	Abstract Algebra 2	15	option	T2
6	BUEM125H6	Real Analysis	15	option	T3
Grad Cert Mathematics and Statistics					
Part-time – 1 year					
6	-	Option from the list of approved modules (indicative list below)	30	Option	T1, 2 or 3
6	-	Option (must be a **statistics** module) from the list of approved modules (indicative list below)	30	Option	T1, 2 or 3
Indicative List of Option Modules					
6	BUEM003S6	Statistics: Theory and Practice	30	Option	T1
6	BUEM021S6	Calculus 3: Transforms & Models	30	option	T1 + T2
6	BUEM124H6	Abstract Algebra 2	15	option	T2
6	BUEM125H6	Real Analysis	15	option	T3

Core: Module must be taken and passed by student
Compulsory: Module must be taken but can be considered for compensated credit (see CAS regulations paragraph 24)
Option: Student can choose to take this module

How you will learn

Your learning and teaching is organised to help you meet the learning outcomes (below) of the course. As a student, we expect you to be an active learner and to take responsibility for your learning, engaging with all of the material and sessions arranged for you.

Each course is divided into modules. You will find information on the virtual learning site (Moodle, see Academic Support below) about each of your modules, what to expect, the work you need to prepare, links to reading lists, information about how and when you will be assessed.

Most teaching sessions are lectures, presenting both theory and worked examples. Typically a 30 credit module would comprise a total of 18 evenings of lectures, each running from 6-9pm, with eight evenings in each of the Autumn and Spring terms, and two revision evenings in the Summer Term.

Detailed course notes, problems and worked solutions are provided to accompany lectures on each module. This facilitates the independent study necessary to understand and assimilate the

material. Regular coursework and a variety of assessment methods are also designed to be formative and promote learning. The Problems in Mathematics module enables students to develop their knowledge of some areas of mathematics of cultural and historical significance, through self-study, supported by occasional lectures.

Individual tutorials are provided as required and are an integral part of the teaching provision. Students may also consult staff by telephone and email.

How we will assess you

The course will use a variety of assessment methods. Assessment is used to enhance your learning rather than simply to test it. For most of the modules associated with this course, your assessment will be through the following types of assessment:

- Unseen 3 hour examinations in May/June for 30 credit modules
- Unseen 2 hour examinations at the end of the term for 15 credit (1-term) modules
- Assessed assignments, such as problem sheets or essays, and for some modules in-class or online tests

For most modules 80% of the assessment comes from unseen examinations. This allows time for students to assimilate the material and develop a thorough understanding of the course curriculum. The 20% contribution from coursework enables students to get practice in tackling and solving problems independently, without the time pressure of examinations, and gives staff an opportunity to give relevant feedback.

The range of assessments, and the type of questions and problems set within examinations and assignments are structured to balance theory and practice, to address the individual learning outcomes and to discriminate between different levels of achievement. However, the assessment strategy recognizes that students may exhibit very different aptitudes and abilities in different aspects of the course and in different forms of assessment. This is particularly relevant to Birkbeck students who vary considerably in terms of academic background, prior work experience, current career and future career plans. The assessment strategy is therefore designed to: (i) ensure a good coverage of the curriculum and address the range of learning outcomes, (ii) perform an on-going formative function via the theoretical and practical assignments associated with all course modules; (iii) give all students the opportunity to demonstrate their strengths and show what they can do well.

Learning outcomes (what you can expect to achieve)

‘Learning outcomes’ indicate what you should be able to know or do at the end of your course. Providing them helps you to understand what your teachers will expect and also the learning requirements upon which you will be assessed.

At the end of this course, you should be able to:

Subject Specific:

- Understand and use mathematical techniques.
- Demonstrate knowledge and understanding of a range of results in mathematics.
- Appreciate the need for rigour in mathematics, such as valid proofs or initial assumptions, and the ability to follow and construct mathematical arguments.
- Appreciate the power of generalization and abstraction in mathematics.

- Demonstrate a deeper knowledge of some particular areas of mathematics (or mathematics and statistics for the award of Grad Cert Mathematics and Statistics).

Intellectual

- Comprehend conceptual and abstract material.
- Develop a logical and systematic approach to problem solving.

Practical

- Demonstrate problem-solving skills, including the ability to assess problems logically and to approach them analytically.
- Demonstrate highly developed quantitative skills
- Transfer knowledge and expertise from one context to another.

Personal and Social

- Learn independently using a variety of media.
- Work independently with patience and persistence.
- Demonstrate time-management and organizational skills.
- Demonstrate good communication skills, including the ability to write coherently.
- Complete work in a limited time period.

Careers and further study

Graduates can pursue career paths in the financial sector, actuarial profession, IT and computing, teaching and academia. Possible professions include:

- actuary
- statistician
- chartered accountant
- corporate investment banker
- investment analyst
- quantity surveyor.

Birkbeck offers a range of careers support to its students. You can find out more on the careers pages of our website.

Academic regulations and course management

Birkbeck's academic regulations are contained in its Common Award Scheme Regulations and Policies published by year of application on the Birkbeck website.

You will have access to a course handbook on Moodle and this will outline how your course is managed, including who to contact if you have any questions about your module or course.

Support for your study

Your learning at Birkbeck is supported by your teaching team and other resources and people in the College there to help you with your study. Birkbeck uses a virtual learning environment called Moodle and each course has a dedicated Moodle page and there are further Moodle sites for each of your modules. This will include your course handbook.

Birkbeck will introduce you to the Library and IT support, how to access materials online, including using Moodle, and provide you with an orientation which includes an online Moodle module to guide you through all of the support available. You will also be allocated a personal tutor and provided with information about learning support offered within your School and by the College.

Please check our website for more information about student support services. This covers the whole of your time as a student with us including learning support and support for your wellbeing.

Quality and standards at Birkbeck

Birkbeck's courses are subject to our quality assurance procedures. This means that new courses must follow our design principles and meet the requirements of our academic regulations. Each new course or module is subject to a course approval process where the proposal is scrutinised by subject specialists, quality professionals and external representatives to ensure that it will offer an excellent student experience and meet the expectation of regulatory and other professional bodies.

You will be invited to participate in an online survey for each module you take. We take these surveys seriously and they are considered by the course team to develop both modules and the overall courses. Please take the time to complete any surveys you are sent as a student.

We conduct an annual process of reviewing our portfolio of courses which analyses student achievement, equality data and includes an action plan for each department to identify ongoing enhancements to our education, including changes made as a result of student feedback.

Our periodic review process is a regular check (usually every four years) on the courses by department with a specialist team including students.

Each course will have an external examiner associated with it who produces an annual report and any recommendations. Students can read the most recent external examiner reports on the course Moodle pages. Our courses are all subject to Birkbeck Baseline Standards for our Moodle module information. This supports the accessibility of our education including expectations of what information is provided online for students.

The information in this programme specification has been approved by the College's Academic Board and every effort has been made to ensure the accuracy of the information it contains.

Programme specifications are reviewed periodically. If any changes are made to courses, including core and/or compulsory modules, the relevant department is required to provide a revised programme specification. Students will be notified of any changes via Moodle.

Further information about specifications and an archive of programme specifications for the College's courses is available online.

Copyright, Birkbeck, University of London 2022 ©