Year of entry: 2022/23

Programme Specification

1	**Awarding body**	University of London					
2	**Teaching Institution**	**Birkbeck College**					
3	**Programme Title(s)**	**Graduate Certificate Mathematics**					
4	**Programme Code(s)**	GCGMTHMT_C					
5	**UCAS code**	N/A					
6	**Home Department**	Economics, Mathematics and Statistics					
7	**Exit Award(s)**	Graduate Certificate Mathematics and Statistics (for a specific pathway)					
8	**Duration of Study** (number of years)	1 year					
9	**Mode of Study**	FT		PT	✓	DL	
10	**Level of Award (FHEQ)**	6					
11	**Other teaching depts or institution**	N/A					
12	**Professional, Statutory Regulatory Body (PSRB) details**	N/A					
13	**QAA Benchmark Group**	Mathematics, Statistics and Operational Research					

14	**Programme Rationale & 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 awarded to students taking one mathematics module and one statistics module. The intention of this award is 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.

15	**Entry Criteria**
	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.

16	**Learning Outcomes**
	On successful completion of this programme a student will be expected to have: **Subject Specific:** LO1 Knowledge and understanding of, and the ability to use, mathematical techniques. LO2 Knowledge and understanding of a range of results in mathematics. LO3 Appreciation of the need for rigour in mathematics, such as valid proofs or initial assumptions, and the ability to follow and construct mathematical arguments. LO4 Appreciation of the power of generalization and abstraction in mathematics. LO5 A deeper knowledge of some particular areas of mathematics. L06 A deeper knowledge in mathematics and statistics (for the award Graduate Certificate in Mathematics and Statistics). **Intellectual:** LO6 Ability to comprehend conceptual and abstract material. LO7 Develop a logical and systematic approach to problem solving. **Practical:** LO8 Problem-solving skills, including the ability to assess problems logically and to approach them analytically. LO9 Highly developed quantitative skills LO10 Ability to transfer knowledge and expertise from one context to another. **Personal and Social:** LO11 Ability to learn independently using a variety of media. LO12 Ability to work independently with patience and persistence. LO13 Time-management and organizational skills. LO14 Good communication skills, including the ability to write coherently. LO15 Ability to complete work in a limited time period.

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17	**Learning, teaching and assessment methods**
	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. The methods of assessment used are: Unseen 3 hour examinations in May/June. Assessed assignments. Essays. For most modules 80% of the assessment comes from unseen examinations in May/June. 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. Both the external and the second internal examiner normally scrutinize all examination papers before they are finalized. Exams and Essays are all double marked. Coursework is marked by the first examiner and moderated by the second internal examiner. All marks are moderated by the External Examiner, who is invited to comment on the suitability of the assessment methods, criteria and procedures. These comments influence any changes that are recommended at the programme review meeting.

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18	**Programme Description**
	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.

19	**Programme Structure**

Part-Time programme – Grad Cert Mathematics

Year 1

Level	Module Code	Module Title	Credits	Status*
6	-	Option from the list of approved modules (indicative list below, all are on BSc Maths (UBSMTHMT_C))	30	Option
6	-	Option from the list of approved modules (indicative list below, all are on BSc Maths (UBSMTHMT_C))	30	Option

Indicative List of Options

Level	Module Code	Module Title	Credits	Status*
6	EMMS094S6	Algebra 2: Theory & Structure	30	Option
6	BUEM008S6	Real & Complex Variable	30	Option
6	BUEM009S6	Problems in Mathematics	30	Option
6	BUEM021S6	Calculus 3: Transforms & Models	30	Option
6	BUEM010S6	Computational Mathematics	30	Option
6	EMMS093S6	Number Theory & Geometry	30	Option
6	BUEM004S6	Advanced Mathematical Methods	30	Option

Part-Time programme – Grad Cert Mathematics and Statistics

Year 1

Level	Module Code	Module Title	Credits	Status*
6	-	Option from the list of approved modules (see indicative list below, all are on BSc Mathematics (UBSMTHMT_C))	30	Option
6	-	Option (must be a **statistics** module) from the list of approved modules (indicative list below, all are on BSc Mathematics and Statistics (UBSMTSTA_C))	30	Option

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Indicative List of Options				
Level	**Module Code**	**Module Title**	**Credits**	**Status***
6	EMMS094S6	Algebra 2: Theory & Structure	30	Option
6	BUEM008S6	Real & Complex Variable	30	Option
6	BUEM009S6	Problems in Mathematics	30	Option
6	BUEM021S6	Calculus 3: Transforms & Models	30	Option
6	BUEM010S6	Computational Mathematics	30	Option
6	EMMS093S6	Number Theory & Geometry	30	Option
6	BUEM004S6	Advanced Mathematical Methods	30	Option
6	BUEM024S6	Statistical Modelling	30	Option
6	BUEM003S6	Statistics: Theory and Practice	30	Option
6	BUEM023S6	Probability Models and Time Series	30	Option

Status*

CORE – Module must be taken and passed by student; COMPULSORY – Module must be taken, mark can be reviewed at sub-exam board; OPTIONAL – Student can choose to take this module.

20	**Programme Director**	Amarpreet Rattan
21	**Start Date** ***(term/year)***	Autumn 2010 (Autumn 2017 for new exit award Graduate Certificate in Mathematics and Statistics)
22	**Date approved by TQEC**	Spring 2010
23	**Date approved by Academic Board**	Summer 2010
24	**Date(s) updated/amended**	11 January 2017