Birkbeck
UNIVERSITY OF LONDON

Programme Specification

1	**Awarding body**	University of London
2	**Teaching Institution**	**Birkbeck College**
3	**Programme Title(s)**	**BSc Mathematics with Statistics**
4	**Programme Code(s)**	UUBSMWST_C (3 year full-time) UBSMTWST_C (4 year part-time)
5	**UCAS code**	G1G3
6	**Home Department**	Economics, Mathematics and Statistics
7	**Exit Award(s)**	Certificate of Higher Education Diploma of Higher Education
8	**Duration of Study** (number of years)	3 years full-time/4 years part time
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 Statement**	Mathematics, Statistics and Operational Research

14	**Programme Rationale & Aims**
	The BSc Mathematics with Statistics aims to provide a broad education in the main areas of mathematics and statistics and the application of the subjects to problems in the natural and social sciences. The programme covers both theoretical aspects of the subjects as well as methods and modelling techniques. Students develop an understanding of a range of mathematical skills together with the abstract background to enhance their comprehension of this material. Computing forms an integral part of the programme both as an aid to understanding the course material and in problem solving. In particular, students will work with statistical computing packages. In line with the College's mission to make high quality education available to students who are not able for whatever reason to study during the day, the programme is delivered by evening, face-to-face study and is offered both in part-time and full-time modes.

15	**Entry Criteria**
	UCAS tariff: 112-128 points. A-levels: BBC-ABB, including grade B in mathematics. The UCAS tariff score is applicable where applicants have recently studied a qualification that has a UCAS tariff equivalence. 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. Applicants with work experience who do not have formal mathematics qualifications at A level or equivalent, may still gain entry to the programme if they pass an entrance test.

	Students can also study this programme after successful completion of the foundation year of the BSc Mathematics with Foundation Year at Birkbeck, by transferring onto the BSc Mathematics with Statistics with Foundation Year route.

16	**Learning Outcomes**
	On successful completion of this programme a student will have attained the following learning outcomes.
	Subject Specific:
	LO1 Knowledge and understanding of, and the ability to use, mathematical and/or statistical techniques.
	LO2 Knowledge and understanding of a range of results in mathematics and statistics.
	LO3 Appreciation of the need for proof in mathematics, and the ability to follow and construct mathematical arguments.
	LO4 Awareness of the use of mathematics and/or statistics to model problems in the natural and social sciences, and the ability to formulate such problems using appropriate notation.
	LO5 Understand the importance of assumptions and have an awareness of where they are used and the possible consequences of their violation.
	LO6 Ability to present, analyse and interpret data.
	LO7 Appreciation of the power of generalization and abstraction in the development of mathematical theories.
	LO8 Knowledge and understanding of the processes and limitations of mathematical approximation and computational mathematics.
	LO9 Knowledge and understanding of a range of modelling techniques, their conditions limitations, and the need to validate and revise models.
	LO10 A deeper knowledge of some particular areas of mathematics and statistics.
	LO11 Ability to use a modern mathematical and/or statistical computer package with programming facility, together with knowledge of other suitable packages.
	L012 Appreciation of the historical and cultural aspects of mathematics and statistics.
	Intellectual:
	LO13 Ability to comprehend conceptual and abstract material.
	LO14 Develop a logical and systematic approach to problem solving.
	Practical:
	LO15 Ability to use a range of software packages including word processing, spreadsheets and statistical software packages.
	LO16 Problem-solving skills, including the ability to assess problems logically and to approach them analytically.
	LO17 Highly developed quantitative skills
	LO18 Ability to transfer knowledge and expertise from one context to another.

Personal and Social:

LO19 Ability to learn independently using a variety of media.

LO20 Ability to work independently with patience and persistence.

LO21 Time-management and organizational skills.

LO22 General IT skills, including word processing and spreadsheets.

LO23 Good communication skills, including the ability to write coherently.

LO24 Ability to complete a sustained and substantial task.

LO25 Ability to complete work in a limited time period.

17	**Learning, teaching and assessment methods**

Most teaching sessions are lectures or occasionally computing sessions. Lectures present both theory and worked examples. Computing sessions use either spreadsheets or a modern statistical or mathematical software package, and enable students to learn about these packages and allow them to develop a greater understanding of the course material. The computing sessions are usually self-paced and informal.

Detailed course notes, problems and worked solutions are provided to accompany lectures on each course. 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 email and telephone.

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.

18	**Programme Description**
	The first two years of the programme consist mainly of core and compulsory modules. These modules cover the body of knowledge that every student is expected to know as a key part of university level study in this area. As part of the programme, students may opt to study up to 30 credits at level 4 and 5 in a different subject area, such as management, economics or accounting.
	At level 4 (corresponding to Year 1 Full-Time) there are 90 credits of core modules. At each of levels 5 and 6 there are 60 credits of compulsory modules, and 60 credits of options, allowing students to tailor their programme to suit their interests and strengths.
	(Note: Students who successfully complete the foundation year of the BSc Mathematics with Foundation Year, can transfer onto the BSc Mathematics with Statistics with Foundation Year route to follow the programme shown below.)

19	**Programme Structure**

Full-Time programme – 3 years

Year 1

Level	Module Code	Module Title	Credits	Status*
4	EMMS096S4	Calculus 1	30	Core
4	EMMS097S4	Algebra 1	30	Core
4	BUEM096S4	Numbers, Proofs and Counting	30	Core
4		Indicative option list below	30	Option

Year 2

Level	Module Code	Module Title	Credits	Status*
5	BUEM001S5	Calculus 2	30	Compulsory
5	EMMS098S5	Probability and Statistics	30	Compulsory
5		Indicative option list below	30	Option
5/6		Indicative option list below (students may opt to do at most ONE level 6 maths option with approval of programme director)	30	Option

Year 3

Level	Module Code	Module Title	Credits	Status*
6	BUEM009S6	Problems in Mathematics	30	Compulsory
6/5		Indicative option list below (if they do a level 6 option in year 2, then they do 30 credits level 5 in year 3 to compensate)	30	Option
6	BUEM003S6	Statistics: Theory and Practice	30	Compulsory
6		Indicative option list below	30	Option

Part-Time programme – 4 years

Year 1

Level	Module Code	Module Title	Credits	Status*
4	EMMS096S4	Calculus 1	30	Core
4	EMMS097S4	Algebra 1	30	Core
4	BUEM096S4	Numbers, Proofs and Counting	30	Core

Year 2

Level	Module Code	Module Title	Credits	Status*
4		Indicative option list below	30	Option
5	BUEM001S5	Calculus 2	30	Compulsory
5	EMMS098S5	Probability and Statistics	30	Compulsory

Year 3

Level	Module Code	Module Title	Credits	Status*
5		Indicative option list below	30	Option
5		Indicative option list below	30	Option
6	BUEM003S6	Statistics: Theory and Practice	30	Compulsory

Year 4

Level	Module Code	Module Title	Credits	Status*
6	BUEM009S6	Problems in Mathematics	30	Compulsory
6		Indicative option list below	30	Option
6		Indicative option list below	30	Option

Optional modules (indicative list)

Level	Module Code	Module Title	Credits	Status*
4	BUEM099S4	Explorations in Mathematics	30	Option
4	-	At most 30 credits of modules in another subject area	30	Option
5	BUEM100S5	Number Theory and Cryptography	30	Option
5	BUEM101S5	Algebra 2	30	Option
5	-	At most 30 credits of modules in another subject area	30	Option
6	BUEM102S6	Algebra 3	30	Option
6	BUEM103S6	Analysis	30	Option
6	BUEM104S6	Ordinary Differential Equations	30	Option
6	BUEM105S6	Finite Mathematics	30	Option
6	BUEM089H7	Approximation: Theory and Methods	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]	**Additional Programme Information**
	Students gaining the Certificate in Higher Education in Mathematics from Birkbeck may transfer all 120 credits from that programme, meaning they can go straight to year 2 of the BSc Mathematics with Statistics. Students gaining the Diploma in Higher Education in

	Mathematics from Birkbeck may transfer all 240 credits from that programme, meaning they can go straight to year 3 of the BSc Mathematics with Statistics.

21	**Programme Director**	Dr Andrew Bowler
22	**Start Date** *(term/year)*	Prior to 2008/9
23	**Date approved by TQEC**	Prior to 2008/9
24	**Date approved by Academic Board**	Prior to 2008/9
25	**Date(s) updated/amended**	February 2019