PROGRAMME SPECIFICATION KEY FACTS

Programme name	Mathematics with Business
Award	BSc (Hons), BSc (Hons) with Placement Year
Exit Awards	BSc (Ordinary), Diploma of HE, Certificate of HE
School	School of Science and Technology
Department or equivalent	Mathematics
UCAS Code	G1N1/G11N
Programme code	USMABU / USMABP - with Placement Year
Type of study	Full-time
Total UK credits	360
Total ECTS	180

PROGRAMME SUMMARY

Mathematical and statistical expertise is becoming ever more important in business, providing both specific skills and a logical adaptable mindset. The principal aim of this programme is to introduce you to a variety of the most important aspects of modern mathematics in combination with knowledge of business methodology and the relevance of mathematics. In mathematics, you will cover a broad spectrum of mathematics, with the focus of the later part of the degree being on mathematics with real applications. You will at the same time receive a thorough grounding in business principles. You will receive training in advanced mathematical and business methods and develop problem solving and communication skills much valued by employers.

Aims

1. To develop in you a comprehensive knowledge of mathematics, its application to business and an understanding of business principles.

2. To develop in you the ability to communicate your knowledge and understanding effectively.

3. To prepare you to enter postgraduate studies at the masters level in mathematics and other closely related subjects, as well as masters courses with a strong aspect of business and management.

4. To provide you with the basic knowledge and skills to analyse and solve mathematically based problems.

5. To enable you to cast and solve real-world problems in a mathematical framework.

6. To enable you to appreciate the universal nature of mathematics, a subject with no international boundaries.

Content

The programme is organized in three years (also called programme stages) or four years with a placement year. The placement takes place in the third year.

Year 1 of the programme is devoted to core material, including basic statistics that is needed by all mathematics graduates, as well as introducing you to business and management, including business economics. On completing this year, you will be able to discuss underlying concepts and principles of mathematics and statistics and to apply these to specific problems.

In year 2 the course is still mainly core modules, including programming. to prepare you for your later studies, but there are also electives for you to choose from. On completing year 2, you will be able to build on your previous knowledge and experience from Programme Stage one. You will master more advanced mathematical techniques and will be able to apply these to real life problem-solving, as well us studying core business concepts including entrepreneurship, finance and accounting.

In year 3 you will be able to tailor your studies to your own interests, taking core modules together with electives in mathematics and business. A distinctive feature of the programme is the final year group project, which provides you with the opportunity to write a technical report and give individual presentations.
The programme is undertaken full time.

Registration Period

The minimum registration period is 3 years and the maximum registration period is six years.

WHAT WILL I BE EXPECTED TO ACHIEVE?

Learning Outcomes

On successful completion of this programme, you will be expected to be able to:

Knowledge

- synthesise and apply the major ideas of pure mathematics.
- formulate problems mathematically and select appropriate mathematical methods for a wide range of scenarios.
- evaluate and appropriately apply the major methods of numerical mathematics, applied and applicable mathematics, computing and computational mathematics.
- understand and appropriately apply the principles of business.
- combine knowledge from various areas and handle complex ideas.

Skills

- communicate in symbolic and written form and using oral presentations.
- apply core concepts and principles in well-defined contexts, showing judgement in the selection and application of tools and techniques.
- use your knowledge of computing to construct programmes in order to solve mathematical and non-mathematical problems.
- comprehend problems, formulating them mathematically and obtaining solutions by appropriate methods.
- acquire an ability to apply mathematics techniques to real world problems.
- understand logical arguments, identifying the assumptions and conclusions made.
- show confidence in calculating and manipulating mathematics within the context of the core modules in mathematics, statistics and business.
- apply mathematical methods to a variety of problems.
- gather, integrate and evaluate information from various sources including the business literature.
- be proficient with modelling techniques (including assessing the limitations of the results obtained), coupled with experience and decision-making, to solve problems that come from business.

Values and attitudes

- demonstrate the value of logical thought with respect to mathematical problems.
- follow, with rigour, an analytical approach towards problems.
- Work effectively and professionally in a team

This programme has been developed in accordance with the QAA Subject Benchmark for Mathematics, Statistics and Operational Research.

WHAT WILL I STUDY?

Programme Stage 1

Programme Stage 1 consists of modules that make up 120 credits. All modules are core.

Programme stage 1 modules

Module Title	SITS Code	Module Credits	Core/ Elective	Compensation Yes/No	Level
Functions, Vectors and Calculus I	MA1623	15	C	N	4
Functions, Vectors and Calculus II	MA1624	15	C	N	4
Algebra	MA1605	15	C	N	4
Linear Algebra	MA1622	15	C	N	4
Introduction to Probability and Statistics	MA1608	15	C	Y	4
Introduction to Modelling	MA1621	15	C	Y	4
Business Economics	BM1101	15	C	N	4
Introduction to Managing People and Change	BM1100	15	C	N	4

Programme Stage 2

Programme Stage 2 consists of modules that make up 120 credits.

There are seven core modules and 15 credits of elective modules.

Programme stage 2 modules

Module Title	SITS Code	Module Credits	Core/ Elective	Compensation Yes/No	Level
Programming and Data Science for the Professions	MA2619	15	C	Y	5
Real Analysis	MA2618	15	C	N	5
Vector Calculus	MA2615	15	C	N	5
Fundamentals of Finance	AS2114	15	C	Y	5
Financial Reporting	AS2207	15	C	Y	5
Introduction to Entrepreneurship	EG2501	15	C	Y	5
Sequences and Series	MA2617	15	E	Y	5
Decision Analysis	AS2021	15	E	Y	5
Applied Mathematics	MA2607	15	E	Y	5
Numerical Mathematics	MA2608	15	E	Y	5
Professional Development and Employability for Mathematics	MA2201	15	C	N	5
Applications of Probability and Statistics	MA2611	15	E	Y	5

Programme Stage 3

Programme Stage 3 consists of modules that make up 120 credits. There are three core taught modules, a core Group project, 30-45 credit of optional mathematics modules and 15-30 credits of optional business modules. The module MA2611 is a prerequisite for MA3666. For students taking the placement year, you will take the modules below in year 4, and in year 3 take the 120 credit level 6 non-compensatable core placement module IN3053.

Programme stage 3 modules

Module Title	SITS Code	Module Credits	Core/ Elective	Compensation Yes/No	Level
Group Project	MA3697	15	C	N	6
Complex Analysis	MA3659	15	C	Y	6
Differential Equations I	MA3617	15	C	Y	6
Diferential Equations II	MA3618	15	E	Y	6
Operations and Supply Chain Management	EG3503	15	C	Y	6
Business in Society	BM3101	15	E	Y	6
Corporate Finance IF3108	IF3108	15	E	Y	6
Strategy for Business BS3100	BS3100	15	E	Y	6
Codes	MA3100	15	E	Y	6
Advanced Complex Analysis	MA3661	15	E	Y	6
Operational Research	AS3021	15	E	Y	6
Probability 2	MA3666	15	E	Y	6
Graph Theory	MA3300	15	E	Y	6
Game Theory	MA3662	15	E	Y	6
Dynamical Systems	MA3608	15	E	Y	6
Introduction to the Mathematics of Fluids	MA3609	15	E	Y	6
Introduction to Mathematical Physics	MA3663	15	E	Y	6
Mathematical Processes for Finance	MA3614	15	E	Y	6
Groups and Symmetry	MA3615	15	E	Y	6
Mathematical Biology	MA3616	15	E	Y	6

HOW WILL I LEARN?

Teaching and Learning methods are designed to foster your knowledge of and enthusiasm for the subject and stimulate engagement and participation in the learning process. They encourage learning in depth and encourage you to reflect on and take responsibility for your own learning and to develop your academic self-confidence.

The majority of courses are taught using lectures. These are supported through tutorials, laboratories and examples classes where appropriate. Details can be found in the individual module specifications.

Lectures are the principal introduction to new material. They are relatively formal in style and are presented to the whole student group or sometimes to more than one group together. For most modules in years 2 and 3 this will include some online delivery. Each lecture is of 50 minutes duration with the timetable based on units of one hour to allow for short breaks. Full, prompt attendance is expected.

For tutorials, groups are much smaller and provide opportunities for you to work on problems and exercises connected with the lecture courses. This also provides an additional opportunity for staff to help you with questions arising from the lectures.
Laboratories provide you with the opportunity to practice computational and programming techniques, and to seek practical help from a tutor.

In addition to the taught elements of the programme, which on average require around 10-14 contact hours per week, there will be the need for private study. This time will be spent working on background reading, revision of notes, work on tutorial problems, coursework and individual or group work on projects.

The academic year consists of two eleven week teaching periods and two main examination periods. You are expected to undertake around 30 hours per week of private study spread over a rather longer period than the contact hours, to account for reflective learning weeks, revision and the project work in the summer term. The ratio of private study to contact hours is approximately 4:1. The number of self-directed study hours for each module is specified in the module specification.

All modules are supported by an online learning platform called "Moodle". Moodle contains information specific to the modules you are studying on your programme and additional modules that provide support for your studies in a variety of ways. Moodle is used by different modules in different ways, but you will generally find module material, such as module specifications, lecture notes, supplementary study material, tutorial sheets etc., which you can download or look at online. Each module page also contains a "Grades" application where you can view your coursework marks for the module.

There are also two Moodle modules which are designed to support your studies in a more general way: the "Mathematics Focal Point" which contains information relevant to the administration of the programme and the "SST Placement & Internships Resource Centre", which helps you find placements and internships. Moodle will also be used to send messages to you.

All students have Personal Tutors. These staff members provide small group tutorials throughout Programme Stage 1 on a weekly basis, hold meetings each term with tutees in stages 2-3, and are available to help throughout your time at the University. They provide support on academic and pastoral matters, as well as serving as a link with other resources within the University.

For students on a placement year you will spend the third year of your degree working for a company. You will learn through self-study of academic, work based and industry related materials and regular progress review meetings with your Visiting Tutor (VT) and Work-place Supervisor (WPS). Much of your learning will be implicit in your daily tasks and projects and will be made explicit through the module deliverables, your own research and reflective discussion with your VT and WPS.

WHAT TYPES OF ASSESSMENT AND FEEDBACK CAN I EXPECT?

Assessment and Assessment Criteria

Most modules are assessed with examinations and tests or coursework assignments. Details can be found in the individual module specifications. Assessment is carried out according to context and purpose and recognises that you may exhibit different aptitudes in different forms of assessment:

- Some assessment is by set exercises or coursework which you take home and complete with the aid of your notes, for example for some Business modules that require essay components.

- There are formal unseen written examinations every year. The lengths of the examinations vary with module, although two hours is a common duration.

- Some assessment takes the form of class tests, which are usually of 30 minutes duration, or online tests.

- A small number of modules require students to give presentations, in particular the year 3 group project.

In addition to assessing knowledge and understanding of Mathematics and Business, the programme also assesses the ability to use these ideas in the context of an application, the ability to carry out a substantial piece of independent work and the ability to communicate effectively.

Assessment Criteria are descriptions, based on the intended learning outcomes, of the skills, knowledge or attitudes that you need to demonstrate in order to complete an assessment successfully. Grade-related Criteria are descriptions of the level of skills, knowledge or attributes that you need to demonstrate in order achieve a certain grade or mark in an assessment. Assessment Criteria and Grade-related Criteria will be made available to you to support you in completing assessments. These may be provided in programme handbooks, on the virtual learning environment or attached to a specific assessment task.

For students taking the placement year, you will be assessed through a written report, a professional communication project and two reflective assessments of your engagement and progress in your placement role as well as professional and technical development through Work-based Progress Review forms, combining self-assessment and input from your Work-place Supervisor (WPS).

Feedback on assessment

Feedback will be provided in line with our Assessment and Feedback Policy. In particular, you will normally be provided with feedback within three weeks of the submission deadline or assessment date. This would normally include a provisional grade or mark. For end of module examinations or an equivalent significant task (e.g. an end of module project), feedback will normally be provided within four weeks. The timescale for feedback on final year projects or dissertations may be longer. The full policy can be found at: Assessment | City, University of London

Feedback will typically consist either of individual comments on your work, or of model solutions with general comments on common errors delivered during a lecture or via Moodle. For examinations, you may be allowed to view your scripts for feedback purposes, in conjunction with your lecturer.

Assessment Regulations

In order to pass your Programme, you should complete successfully or be exempted from the relevant modules and assessments and will therefore acquire the required number of credits. You also need to pass each Programme Stage of your Programme in order to progress to the following Programme Stage.

The pass mark for each module in all stages is 40%. There is usually no requirement to pass separate components in any modules, an exception being the group project module in stage 3.

Details can be found in the relevant module specifications.

If you fail an assessment component or a module, the following will apply:

1.   Compensation: where you fail up to a total of one sixth of the total credits of a Programme Stage at first or resit attempt, you may be allowed compensation if:
•   Compensation is permitted for the module involved (see the What will I Study section of the programme specification), and
•   It can be demonstrated that you have satisfied all the Learning Outcomes of the modules in the Programme Stage, and
•   A minimum overall mark of no more than 10% below the module pass mark has been achieved in the module to be compensated, and
•   An aggregate mark of 40% has been achieved for the Programme Stage.

Where you are eligible for compensation at the first attempt, this will be applied in the first instance rather than offering a resit opportunity.

If you receive a compensated pass in a module, you will be awarded the credit for that module. The original component marks will be retained in the record of marks and your original module mark will be used for the purpose of your Award calculation.

In addition, for the final year of study, condonation is possible, where the above condition on the minimum overall mark is removed. Condonation may only be made in one 15 credit module.

Compensation and condonation are only permissible for modules as set out in the Programme Scheme, thus ensuring that all Programme Route Learning Outcomes have been met.

2.   Resit: where you are not eligible for compensation at the first attempt, you will be offered one resit attempt.

If you are successful in the resit, you will be awarded the credit for that module. The mark for each assessment component that is subject to a resit will be capped at the pass mark for the module. This capped mark will be used in the calculation of the final module mark together with the original marks for the components that you passed at first attempt.

If you do not meet the pass requirements for a module and do not complete your resit by the date specified you will not progress to the next Programme Stage and the Assessment Board will require you to be withdrawn from the Programme.

If you fail to meet the requirements for a particular Programme Stage or the Programme, the Assessment Board will consider whether you are eligible for an Exit Award as per the table below.

If you would like to know more about the way in which assessment works at City, please see the full version of the Assessment Regulations at: Senate-Regulation-19-Assessment-Regulations-2022-23-v2.5.pdf (city.ac.uk)

WHAT AWARD CAN I GET?

Bachelor's Degree with Honours:

Degree / Stage 3

For all of you completing Stage Three or the Degree you will further develop a coherent systematic, detailed knowledge of mathematics, knowledge of business as well as their synthesis. You will be able to select appropriate mathematical methods to model a variety of business situations, work effectively, individually and in a team, and manage and evaluate your studies clearly.

For students completing the three year programme, your overall aggregate mark will be calculated by combining the aggregate marks from Programme Stages 1, 2 and 3 with weightings 10%, 30% and 60% respectively.in the ratio 1:3:6.

For students taking the placement year (in year 3) the weightings of years 1-4 will be 9%, 27%, 10% and 54% respectively.

Programme stage level, credits and weighting

Programme Stage	HE Level	Credits	Weighting (%)
1	4	120	10
2	5	120	30
3	6	120	60

Classification requirements

Class	% required
I	70
II upper division	60
II lower division	50
III	40

Ordinary Degree:

Programme stage level, credits and weighting

Programme Stage	HE Level	Credits	Weighting (%)
1	4	120	10
2	5	120	30
3	6	60	60

Class requirements

Class	% required
With Distinction	70
With Merit	60

Without classification	40

Diploma of Higher Education:

Diploma / Stage Two

For all of you completing Stage Two or the Diploma in Mathematics with Business you will build on your previous knowledge and experience. You will show more in-depth knowledge and understanding, develop programming and data skills to solve problems and apply core mathematical principles.

Programme stage level, credits and weighting

Programme Stage	HE Level	Credits	Weighting (%)
1	4	120	25
2	5	120	75

Class requirements

Class	% required
With Distinction	70
With Merit	60
Without classification	40

Certificate of Higher Education:

Certificate / Stage One

For all of you completing stage one or the Certificate in Mathematics with Business you will be able to demonstrate understanding of core mathematical concepts, apply standard techniques and construct a logical argument.

Programme stage level, credits and weighting

Programme Stage	HE Level	Credits	Weighting (%)
1	4	120	100%

Class requirements

Class	% required
With Distinction	70
With Merit	60
Without classification	40

EMPLOYABILITY AT CITY

WHAT KIND OF CAREER MIGHT I GO ONTO?

Mathematics programmes prepare you for future employment by providing you with key skills highly valued by employers. Our graduates are very successful at finding employment in a wide range of areas.

Many of our graduates secure jobs in the financial sector. Some of the typical financial institutions recent graduates have gone on to work for include Lloyds TSB, KPMG, Citigroup, Santander, TBS, Commerzbank, and NatWest. Typical jobs within the financial sector have included Financial Consultant, Investment Banker, and Customer Service Officer.

Former students have also gone on to do finance-related work such as accounting or banking management for other types of institutions. Recent examples include the British Museum, The National Children's Bureau, the UK Border Agency and a large number of retailers such as Orange, JD Sports or Sainsbury's.

Students also often go on to work in a variety of strategic and management roles in a wide range of other companies (e.g. in retail) and consultancies.
A number of graduates go on to do further study in the form of a PhD in a mathematics related area or to receive specialist training for particular professions. Examples of specialist training are the PGCE (Postgraduate Certificate in Education), Chartered Financial Analyst and Chartered Accountant.

The Centre for Career & Skills Development provides a service to current full-time and part-time undergraduates and postgraduates and to recent graduates of the University. Their aim is to give you the advice, information and skills you need to make a smooth transition into the world of work.

For more information on the Careers support available at City, please go to:
https://www.city.ac.uk/careers/your-career

WHAT PLACEMENT OPPORTUNITIES ARE AVAILABLE?

You may go on an approved placement between the second and third years, taking module IN3053 Professional Placement & Career Development. Your experience will be graded on the basis of reports from two visits made by the Visiting Tutor and your final report.

Placement guidelines are issued to students and employers at the commencement of training, and these include a placement health and safety booklet. Early in the placement year you will be required, in conjunction with your Workplace Supervisor and the Visiting Tutor (a member of academic staff), to produce a placement plan. Training is monitored through two formal visits by the Visiting Tutor, and written reports. Informal contact is maintained throughout the year as necessary.

If you wish to take a professional placement then you are advised to register accordingly at the beginning of Programme Stage 2. The School of Science and Technology Corporate Relations & Employability Unit Work Based Learning Advisor collaborates with the University Career and Skills Development Service to deliver a series of Professional Development workshops to prepare you for searching for and applying for a work placement. Corporate Relations & Employability Education within the School of Science and Technology is in regular contact with companies and other organisations concerning the availability of training placements and will advise students on making applications.

Independently from the Placements scheme described above, the Work Based Learning Advisor and the Careers Centre also provide support if you wish to take a summer internship during any of your years at University. Furthermore, City University through the Careers Centre supports several volunteering schemes which allow you to develop valuable work and inter-personal skills.

You are welcome to make your own applications at any time but are strongly advised to discuss these with the Work Based Learning Advisor. Support for seeking placements is provided in the SST Placement & Internships Resource Centre module on Moodle.

WILL I GET ANY PROFESSIONAL RECOGNITION?

This programme will meet the educational requirements of the Chartered Mathematician designation, awarded by the Institute of Mathematics and its Applications, when they are/it is followed by subsequent training and experience in employment to obtain equivalent competences to those specified by the Quality Assurance Agency (QAA) for taught masters degrees.
https://ima.org.uk/university-degree-programme-accreditation/

Version: 1.5
Version date: March 2024
For use from: 2025/26

Information is provided subject to Terms and Conditions for study at City, University of London.