OXFORD BROOKES UNIVERSITY

Programme Specification

MMath Mathematics

Valid from: September 2016

Faculty of Technology, Design and Environment

SECTION 1: GENERAL INFORMATION

Awarding body:	Oxford Brookes University
Teaching institution and location:	Oxford Brookes University
Final award:	MMath
Programme title:	Mathematics
Interim exit awards and award titles:	Under specified conditions a BSc (Hons) may be awarded (see section 4.2), as may a BSc, DipHE or CertHE
Brookes course code:	MMA / TE60
UCAS/UKPASS code:	G103
JACS code:	G100
Mode of delivery:	Face to face
Mode/s and duration of study:	Full Time: typically 4 years Sandwich mode: typically 5 years Part Time: typically 8 years
Language of study:	English
Relevant QAA subject benchmark statement/s:	Mathematics, Statistics and Operational Research (2015)
External accreditation/recognition: *(applicable to programmes with professional body approval)*	**PENDING:** Accreditation by the Institute of Mathematics and its Applications to meet the educational requirements of the Chartered Mathematician designation *http://www.ima.org.uk/*
Faculty managing the programme:	Technology, Design and Environment
Date of production (or most recent revision) of specification:	September 2015

SECTION 2: OVERVIEW AND PROGRAMME AIMS

2.1 Rationale for and/or distinctive features of the programme

This programme is designed to develop the academic, vocational and creative skills of students and prepare them for senior roles in a wide range of numerate and analytic professions. The programme will develop teamwork and leadership skills, and will extend the BSc Mathematics course for students wanting to undertake further study, or to pursue a career involving a higher level of mathematics. Students will develop skills that will prepare them to research and adapt mathematical techniques to a wide variety of applications. Students are actively encouraged to undertake a sandwich year programme where they will spend a year working in a professional environment.

A distinguishing feature of this course is the emphasis on mathematical modelling of real-world systems and multi-disciplinary project work, leading to enhanced graduate employability. Students are able to tailor their degree to suit their own career aspirations, by choosing pathways which focus on pure mathematics or on a broad range of mathematical applications.

The first two years of the MMath Mathematics and BSc Mathematics programmes are largely common, allowing transfer from one course to the other depending on suitable academic progress. The distinction between the two programmes is primarily in the range of modules which students select in their final MMath year, allowing students to focus on particular areas of interest. In the fourth year, students study 120 credits at level 7 in common with practice elsewhere. The fourth year features a compulsory individual project, in accordance with the subject benchmark statement for Mathematics, Statistics and Operational Research (2015). Students are then free to choose the remaining four modules. The modules offered allow students to undertake a personalised program of study, giving them access to a range of modules that contribute directly to the named programme and make it distinct from other degrees in similar areas.

2.2 Aim/s of the programme

The principal aim of this course is to provide an education in mathematics and to produce graduates who are equipped with the necessary range of skills and depth of understanding to successfully pursue research or careers in a wide range of analytic professions. Students completing the course will have a good understanding of the foundations, techniques, limitations and applications of selected areas of mathematics, together with the skills and confidence to tackle complex mathematical problems and to formulate and analyse mathematical and numerical models. They will be able to demonstrate an enhanced ability to communicate within and across discipline boundaries, to make effective use of appropriate computer technology and to work both independently and as a member of a team. To accomplish this the programme will specifically aim to:

1) provide a broad education in mathematics from which a career in this or a related subject area may be developed;
2) encourage students to develop a good level of skill in calculation and manipulation of the material presented;
3) promote the use of mathematics as a means of expression and for problem solving in a range of application areas;
4) develop logical, analytical and problem solving abilities, and foster transferable skills in communication and information technology;
5) develop confidence in communication of mathematical arguments and effective and accurate conveyance of conclusions;
6) encourage students to develop a critical and independent approach to their learning;
7) provide a foundation for further academic study as independent learners, research training and future career development.

SECTION 3: PROGRAMME LEARNING OUTCOMES

On successful completion of the programme, graduates will demonstrate the following Brookes attributes:

3.1 Academic literacy

3.1.1 A detailed knowledge and understanding of a range of methods and techniques in mathematics and statistics.
3.1.2 A comprehensive knowledge and understanding of the fundamentals of algebra, linear algebra, calculus and analysis.
3.1.3 Knowledge and experience of applying mathematical techniques arising in a variety of contexts, to include a selection from: discrete mathematics, differential equations, geometry, numerical analysis and applied algebra.
3.1.4 The ability to construct logical mathematical arguments, including those requiring mathematical proof.
3.1.5 The ability to interpret and work with problems formulated in mathematical form.
3.1.6 A substantial knowledge and understanding of mathematical modelling techniques.
3.1.7 Knowledge and understanding of key concepts of probability theory and statistics.
3.1.8 The ability to use and apply selected statistical methods.
3.1.9 The ability to synthesise and apply knowledge from various areas to complex problems.

3.2 Research literacy

3.2.1 An ability to learn independently and apply that skill in order to extend the subject knowledge base or apply acquired knowledge to novel situations in a variety of analytic contexts.
3.2.2 The ability to identify, review and critically analyse appropriate literature to inform subsequent investigations.
3.2.3 Develop professional leadership and research skills in a mathematical research environment
3.2.4 The ability to advance their knowledge and understanding as independent learners and to develop new skills to a high level.

3.3 Critical self-awareness and personal literacy

3.3.1 The ability to select and apply mathematical problem solving techniques and experience in analysing and evaluating these.
3.3.2 The ability to express themselves clearly, concisely, confidently and correctly using mathematical language
3.3.3 A critical and independent approach to learning.
3.3.4 Organisational skills at a personal level in the areas of project and team management showing how these skills are beneficial in relation to effective teamwork resulting in successful solutions to a wide variety of problems.

3.4 Digital and information literacy

3.4.1 The ability to use and apply professional mathematical and statistical software.
3.4.2 Effective use of digital technology to present analysis and solutions to a variety of audiences.
3.4.3 A confident familiarity with a broad range of information technology skills in order to communicate effectively using graphical and numerical techniques, reports and presentations within a technical environment.

3.5 Active citizenship

3.5.1 An ability to effectively communicate information derived from mathematical and statistical analysis to a global audience.
3.5.2 An appropriate range of professional skills in order to pursue careers in business, commerce and industry, operating at a high level of responsibility.

SECTION 4: PROGRAMME STRUCTURE AND CURRICULUM

4.1 Programme structure and requirements:

The programme comprises the following modules.

LEVEL: 4				
Module Code	**Module Title**	**Credits**	**Status**	**Semester of delivery**
U08408	Probability Theory	15	Compulsory	1
U08409	Statistical Inference	15	Compulsory	2
U08603	Algebra & Calculus	30	Compulsory	1 & 2

U08601	Mathematical Skills and Modelling	30	Compulsory	1 & 2
U08609	Introductory Mathematics	15	Recommended	1
U08400	Basic Survey Methods	15	Recommended	2
U08700	Word-processing & Spreadsheet IT Skills	15	Recommended	1 or 2
U08606	Discrete Mathematics	15	Recommended	2

LEVEL: 5				
Module Code	**Module Title**	**Credits**	**Status**	**Semester of delivery**
U08627	Mathematical Models	30	Compulsory	1 & 2
U08424	Quantitative Research Methods	15	Compulsory	1
U08625	Linear Algebra and Analysis	30	Compulsory	1 & 2
U08631	Numerical Analysis I	15	Compulsory	2
U08629	Further Discrete Mathematics	15	Alternative Compulsory (1)	1
U08623	Applied Abstract Algebra	15	Alternative Compulsory (1)	2
U08423	Time Series Analysis	15	Alternative Acceptable (2)	1
U08440	Simulation & Modelling	15	Alternative Acceptable (2)	1
U08420	Mathematical Statistics	15	Alternative Acceptable (2)	2
U08626	Graph Theory	15	Acceptable	1
U08624	Complex Analysis	15	Acceptable	2
LEVEL 5 (Optional Placement Year)				
U04665	Industrial Placement Year	0	Compulsory for sandwich mode students	1 & 2

LEVEL: 6				
Module Code	**Module Title**	**Credits**	**Status**	**Semester of delivery**
U08687	Honours Topics in Mathematics	30	Compulsory	1 & 2
U08671	Ordinary and Partial Differential Equations	30	Compulsory	1 & 2
U08682	Numerical Analysis II	15	Compulsory	1
U08672	Topology	15	Compulsory	1
U08670	Mathematics Group Project	15	Compulsory	2
U08680	Geometry	15	Acceptable	2
U08688	Independent Study in Mathematics	15	Acceptable	1 or 2
U08481	Regression Models	15	Alternative Acceptable (2)	2

LEVEL 7 (Year 4)				
Module Code	**Module Title**	**Credits**	**Status**	**Semester of delivery**
P08604	MMath Project	40	Compulsory	1 & 2
P08600	Functional Analysis	20	Acceptable	1
P08601	Inverse Problems and Applications	20	Acceptable	2
P08603	Stochastic Processes	20	Acceptable	1
P04713	Engineering Reliability and Risk Management	20	Acceptable	2
P04700	Computation and Modelling	20	Acceptable	1
P08602	Numerical Solution of Differential Equations	20	Acceptable	2
P03109	Categorical Data Analysis	20	Acceptable	1
P03108	Advanced Statistical Modelling using SAS	20	Acceptable	2

(1): At least 15 credits from these modules must be included
(2): Not more than two of these modules (30 credits) may be included

Progression from first year to second year requires students, in addition to modular programme regulations, to pass all compulsory modules.

At the end of year 2, students are required to have an average of 65% across the level 5 modules and a minimum of 50% in each of the compulsory level 5 modules. The pass mark for all undergraduate modules is 40% and for all postgraduate modules is 50%. Classification of the award is dependent upon the final year (level 7) modules only.

4.2 Subject-Specific Regulations

Award of MMath

To qualify for the award of an MMath in Mathematics, the candidate must normally pass all final year modules within a one-year period for full-time students and normally within a two-year period for part-time students. The successful completion of all MMath studies must normally occur within a maximum period of eight years, or nine years for sandwich mode, from initial enrolment. These time limits are adjusted on a pro-rata basis for students admitted with credit or students who are part-time in their final year.

Distinction and Merit

A Merit shall be awarded when an average mark of 60% or above is achieved. This must include a mark of at least 58% in the project.

A Distinction shall be awarded when an average mark of 70% or above is achieved. This must include a mark of at least 68% in the project.

Where a student meets the criteria for the classification of both Merit and Distinction, as defined above, the Distinction shall be awarded.

This is in accordance with the University's Regulations for Postgraduate Taught Programmes.

Award of BSc (Hons) or BSc for an MMath student

If, in exceptional circumstances, an MMath student does not satisfy the criteria for the award of the MMath, then the student may be eligible for the award of a BSc (Hons) degree in Mathematics. This would be subject to the satisfactory completion of the module U08699 Mathematics Project, which is compulsory for the BSc (Hons) in Mathematics. If the student is unable to complete the module U08699 Mathematics Project, they would be eligible for a BSc ordinary degree in Mathematics.

MMath Level 7 CAT points

Postgraduate single modules each have a rating of 20 CAT points at Level 7. Double modules are worth 40 Level 7 CAT points. An MMath student must accumulate 120 level 7 CAT points which includes all the compulsory modules in the final year.

To obtain the MMath in Mathematics, students must pass the equivalent of 8 modules (120 credits) at level 4, 16 modules (240 credits) at levels 5 and 6 of which at least 6 modules (90 credits) are at level 6, and 6 modules (120 credits) at level 7. Students must pass the following modules:

Module Code	Module Title	Credits	Level	Status	Semester of delivery
Year 1 – 120 credits at level 4					
U08408	Probability Theory	15	4	Compulsory	1
U08409	Statistical Inference	15	4	Compulsory	2
U08603	Algebra & Calculus	30	4	Compulsory	1 & 2
U08601	Mathematical Skills and Modelling	30	4	Compulsory	1 & 2
Plus a further 30 credits at level 4					
Years 2 and 3 – 240 credits at levels 5 and 6, to include at least 90 credits at level 6					
U08424	Quantitative Research Methods	15	5	Compulsory	1
U08631	Numerical Analysis I	15	5	Compulsory	2
U08625	Linear Algebra and Analysis	30	5	Compulsory	1 & 2
U08627	Mathematical Models	30	5	Compulsory	1 & 2
U08671	Ordinary and Partial Differential Equations	30	6	Compulsory	1 & 2
U08687	Honours Topics in Mathematics	30	6	Compulsory	1 & 2
U08682	Numerical Analysis II	15	6	Compulsory	1
U08672	Topology	15	6	Compulsory	1
U08670	Mathematics Group Project	15	6	Compulsory	2
Plus at least 15 credits from:					
U08629	Further Discrete Mathematics	15	5	Alternative Compulsory	1
U08623	Applied Abstract Algebra	15	5	Alternative Compulsory	2
Plus a selection from the following modules:					
U08626	Graph Theory	15	5	Acceptable	1
U08624	Complex Analysis	15	5	Acceptable	2
U08680	Geometry	15	6	Acceptable	2
U08688	Independent Study in Mathematics	15	6	Acceptable	1 or 2
U08423*	Time Series Analysis	15	5	Alternative Acceptable	1
U08440*	Simulation and Modelling	15	5	Alternative Acceptable	1
U08420*	Mathematical Statistics	15	5	Alternative Acceptable	2
U08481*	Regression Models	15	6	Alternative Acceptable	2
Year 4 – 120 credits at levels 7					
P08604	MMath Project	40	7	Compulsory	1 & 2
P08600	Functional Analysis	20	7	Acceptable	1
P08601	Inverse Problems and Applications	20	7	Acceptable	2
P08603	Stochastic Processes	20	7	Acceptable	1
P04713	Engineering Reliability and Risk Management	20	7	Acceptable	2
P04700	Computation and Modelling	20	7	Acceptable	1
P08602	Numerical Solution of Differential Equations	20	7	Acceptable	2
P03109	Categorical Data Analysis	20	7	Acceptable	1
P03108	Advanced Statistical Modelling using SAS	20	7	Acceptable	2

* no more than 2 of these modules may be included

Under specified conditions a BSc (Hons) may be awarded, as may a BSc, DipHE or CertHE. For details of the requirements for these awards, please see the Programme Specification for BSc (Hons) Mathematics.

4.3 Professional requirements

None

SECTION 5: PROGRAMME DELIVERY

5.1 Teaching, Learning and Assessment

Specialist provision in mathematics is provided within the Department of Mechanical Engineering and Mathematical Sciences. The Mathematics course was designed with three fundamental goals for teaching and learning:

(a) to ensure that the learning process, knowledge and assessment requirements placed on students continues to be transparent, achievable and of high quality
(b) to equip students with appropriate professional and transferable skills, giving them 'added value'
(c) to teach, practise and develop the skills students require to undertake research.

These are developed with reference to national guidelines such as the QAA subject benchmarking document for Mathematics, Statistics and Operational Research. In this vein every effort is made to integrate subject material and show its use, effect and application across the course, while following the University's Assessment Compact. The descriptions that follow are general and should not be seen as exclusive.

Contact time and student effort

Over the first three years, students will study two 30 credit modules and four 15 credit modules per year, divided over two semesters. Each 15 credit undergraduate module requires 150 hours of effort. Timetabled teaching usually consists of 24 hours of lectures and 12 hours of practical classes, supplemented by a further 114 hours of guided self study and preparation for assessment. Students may expect these times to be doubled for 30 credit modules.

For the final year, students will study one 40 credit project and four 20 credit modules, divided over two semesters. Each 20 credit postgraduate module requires 200 hours of effort. Timetabled teaching usually consists of 24 hours of lectures and 24 hours of practical classes, supplemented by a further 152 hours of guided self study and preparation for assessment for each module. Self study typically consists of solving tutorial problems, reading or group meetings.

The strategy for assessment of the learning outcomes is described in each module syllabus. Student engagement with assessment and feedback processes is achieved through such mechanisms as meetings with the programme team, a student forum, Department policy for timely feedback to allow reflection on assessment and learning, and end of module evaluation. The assessment strategy is guided by the "Brookes Assessment Compact" and details may be found at:
http://www.brookes.ac.uk/aske/documents/BrookesAssessmentCompact09.pdf

Module leaders choose a division between examination and coursework that suits the subject and the module learning outcomes. All assessment is designed to be aligned with module learning outcomes and the combination of learning outcomes and individual modules combine to provide the graduate attributes for the subject. There are currently four main strategies for assessment in the programme:

- 80% exam & 20% coursework
- 70% exam & 30% coursework
- 50% exam & 50% coursework
- 100% coursework

Typically examinations in the first three years last for two hours, and in the final year three hours. Coursework assignments are wide ranging and invariably challenging making use of strategies such as:

1. Poster presentations and oral presentations;
2. Reports, essays and other descriptive explanation;
3. Problem sheets;

4. Group and individual projects;
5. Class tests.

The provision of a coursework calendar prevents the bunching of deadlines, whilst student involvement in programme meetings helps to ensure that they have input to the development of assessment policy implemented in the programme. The virtual learning environment is used extensively to provide a wide variety of teaching materials and assessment methods with both formative and summative feedback. The virtual learning environment also makes learning resources, peer group support and interaction available outside normal working hours.

For level 4, 5 and 6 modules, in addition to the overall 40% pass mark, students are normally required to gain at least 30% of the available coursework mark and at least 30% of the available examination mark. For level 7 modules, in addition to the overall 50% pass mark, students are normally required to gain at least 40% of the available coursework mark and at least 40% of the available examination mark.

Achieving the Graduate Attributes

Graduate attributes are mapped to learning outcomes in groups of modules as follows:

Academic literacy

As a discipline, mathematics is cumulative in nature, and as such the acquisition of new skills in unfamiliar branches of the subject is heavily reliant on well developed prerequisite knowledge. The construction of logical mathematical arguments is a key competence developed in mathematics modules at all levels and requires the synthesis of new and familiar concepts in the subject. All modules in mathematics require the use of mathematical methods and problem solving techniques, where information expressed in mathematical form has to be analysed, manipulated, simplified and interpreted.

Throughout the course the focus is on real-world applications and the theory that underpins them. Revision of key concepts from A-level is included in the optional module U08609 Introductory Mathematics, and this provides a basis for undergraduate level study. The programme includes a progression through a spine of compulsory mathematics modules, namely U08603 Algebra and Calculus in the first year, U08625 Linear Algebra and Analysis in the second year and U08671 Ordinary and Partial Differential Equations in the third year. U08603 Algebra and Calculus develops the foundations of algebra and calculus and includes some introductory material on linear algebra and mathematical proof. This provides the background for a formal treatment of linear algebra and analysis in the compulsory module U08625 Linear Algebra and Analysis which is taken in the second year. These core modules develop the advanced level prerequisite knowledge required for the study of level 6 and 7 mathematics modules, All programmes will include a selection of areas of mathematics from: discrete mathematics (U08626 Graph Theory, U08629 Further Discrete Mathematics), differential equations (U08671 Ordinary and Partial Differential Equations), numerical analysis (U08631 Numerical Analysis I, U08682 Numerical Analysis II), geometry and topology (U08680 Geometry, U08672 Topology) and applied algebra (U08623 Applied Abstract Algebra).

Statistical knowledge is developed through the compulsory modules U08408 Probability Theory and U08409 Statistical Inference in the first year and U08424 Quantitative Research Methods in the second year. Foundation work on probability theory and distributions is covered in U08408 Probability Theory. This is applied to random samples in U08409 Statistical Inference, where estimation and testing are also included. These two modules provide the necessary prerequisite statistical knowledge for a study of statistics at advanced level. In the compulsory advanced level module U08424 Quantitative Research Methods, further statistical methods are presented and analysed. Having completed these three compulsory modules, students have the necessary background knowledge to take modules in other areas of statistics at a higher level.

Mathematical modelling forms an integral part of the programme with the compulsory modelling modules U08601 Mathematical Skills and Modelling in the first year followed by U08627 Mathematical Models in the second year. Students develop skills in applying mathematical techniques to a wide variety of application areas throughout the course, and this becomes the main focus in the fourth and final year. Real-world applications of mathematics and mathematical models are considered in U08687 Honours Topics in

Mathematics, and will form the basis of the group and individual projects U08670 Mathematics Group Project and P08604 MMath Project. Students can choose from a range of modules designed to illustrate the use of mathematics in the real-world to prepare students for careers involving higher mathematical skills or for further study in applications of mathematics, for example in engineering risk management (P04713 Reliability and Risk Management), medicine (P08601 Inverse Problems and Applications, P03108 Advanced Statistical Modelling using SAS), geophysics (P08601 Inverse Problems and Applications) or the social sciences (P08603 Stochastic Processes).

Research literacy

Research literacy is a constant theme that appears again and again throughout the programme, from writing reports on mathematical models developed in U08601 Mathematical Skills and Modelling in the first year to more extended pieces of library research in U08424 Quantitative Research Methods. In these modules, students apply skills and research literacies gained in earlier modules to enable them to plan an original piece of work and carry out the necessary research to familiarise themselves with current work in the area. The compulsory module U08687 Honours Topics in Mathematics centres around staff research areas, while students' own research skills are developed through the compulsory U08670 Mathematics Group Project and the individual P08604 MMath Project.

Critical self-awareness and personal literacy

This Graduate Attribute is addressed in a number of modules. Confidence in selecting and applying mathematical problem solving techniques is developed from the start of the course, with applications of mathematics being introduced in the first semester in the optional module U08609 Introductory Mathematics and featuring in modules such as U08629 Further Discrete Mathematics and U08623 Applied Abstract Algebra. Teamwork is an integral part of many modules, from modelling tasks in U08601 Mathematical Skills and Modelling and survey design in U08400 Basic Survey Methods to group work in U08424 Quantitative Research Methods, U08440 Simulation and Modelling and the U08670 Mathematics Group Project. Discipline specific communication skills are developed throughout the course where mathematical arguments are presented, discussed, evaluated and applied, in the form of a solution or analysis of a problem, a mathematical proof, or a report on a mathematical topic. Oral communication is developed throughout the course via the mathematical discussion of problems and forms an integral part of selected topics in the compulsory module U08687 Honours Topics in Mathematics. Teamworking and professional skills are developed through the U08670 Mathematics Group Project and the optional U04665 Industrial Placement Year.

Digital information literacy

Graduates of the programme necessarily have very well developed computer based analytical skills because of the large amount of computer software used throughout the course. Mathematical software is first introduced in U08601 Mathematical Skills and Modelling and is also taught and used as a tool to assist with the analysis of problems in the honours module U08687 Honours Topics in Mathematics. Further use of mathematical software is also made in other modules at advanced level (e.g. U08631 Numerical Analysis I) and honours level (e.g. U08682 Numerical Analysis II). Statistical software is first introduced in the basic module U08408 Probability Theory and is also used in U08409 Statistical Inference and U08424 Quantitative Research Methods. In the fourth and final year, the use of mathematical software becomes the focus of the M level modules P04700 Computation and Modelling and P03108 Advanced Statistical Modelling using SAS.

However, the Graduate Attribute 'Digital information literacy' extends beyond this to include the use of computers for more general skills such as presentations, literature reviews, preparation of reports, and so on. Several modules throughout the programme, for example U08623 Applied Abstract Algebra, provide the opportunity to gain these digital literacy skills.

Active citizenship

This Graduate Attribute relates to how well the graduates of the programme are prepared to work in the international and global business context. The modern treatment of mathematics relies heavily on the use

of established symbolic notation and as such the subject has become an international language which is practised and used word-wide.

The current staff comprises a diverse group of individuals from several continents, who have experience of teaching both in the UK and elsewhere, both in English and in other languages. To their teaching, the members of this group necessarily bring both cultural diversity and knowledge of the subject curricula in other countries. This is further enhanced by the experiences of researchers in the group who are involved in international collaborations and participate at international conferences.

The group has active exchange links, through the Erasmus Programme, with the University of Malta and the Pedagogische Hochschule Karlsruhe. Students studying Mathematics have the opportunity to undertake exchanges and there are international students on all courses. All of these activities contribute towards enhancing the international flavour of the community of learners and teachers working together during modules.

5.2 Assessment regulations

The programme conforms to the University's Undergraduate Modular Programme Regulations and the University's taught postgraduate regulations.

Students must normally have an upper second class degree profile and minimum acceptable scores on the level 5 compulsory modules to progress from undergraduate to postgraduate stages of the MMath programme.

SECTION 6: ADMISSIONS

6.1 Entry criteria

Students entering year 1 of the course will normally hold one of the following qualifications:

(i) A-levels (typically a minimum of ABB grades) in three subjects, including Mathematics at grade A or above.

(ii) International Baccalaureate Diploma (typically a minimum of 32 points with at least 5 in Higher Mathematics)

(iii) BTEC National Diploma (typically with two distinctions and one merits) PLUS A2-level Mathematics at grade A minimum

A minimum grade C at GCSE English Language is expected.

Credit entry into the second or third year of the programme may be possible for students who have accrued appropriate mathematical credits. This will be assessed on an individual basis.

Entry to the MMath and BSc (Hons) degree in Mathematics is also possible via the Foundation Year in Engineering (FEG) and Foundation Year in Computing (FCO) offered by the Faculty of Technology, Design and Environment. This option is normally recommended to those prospective students whose entry qualifications do not match the levels outlined in the above paragraph.

English Language Requirements

For details of the University's English Language requirements see:
http://www.brookes.ac.uk/international/apply/english/.

In particular, students for whom English is not their first language are required to have IELTS 6.0 (with 6.0 in reading and writing, 5.5 in listening and speaking).

6.2 DBS checks

While DBS checks may be needed for certain placement year positions, a DBS check is not necessary for this course.

SECTION 7: STUDENT SUPPORT AND GUIDANCE

For many years, the Department has provided new students (including direct entry) with a detailed induction programme in the first week of Semester 1. This is now followed on by the Open Seminar Series. Students often feel there is an 'overload' and too much to 'take-in' in Week 1 so the Open Seminar Series provides an opportunity to embed University learning approaches and styles. It should also be remembered that many students, particularly overseas students, miss out on Week 1 activities due to arriving late at the University. Upon arrival at the University all students are allocated an Academic Advisor and have access to Student Support Co-ordinators for general academic and pastoral advice, respectively.

In practical terms, support for student achievement is given in a variety of ways, namely a timetable of tutorials and workshops, practical classes to support material covered in formal lectures as well as the 'surgeries' described earlier.

The Department is supportive of students with registered disabilities and special needs and works closely with Student Support Co-ordinators who liaise closely with students, staff involved with their learning and teaching, and the University's Student Services who operationalise the University's disability policies. These mechanisms allow for enhanced learning opportunities from this group of students. For example, online resources on various disabilities are available to staff via the University's intranet. Support for disabled students is provided centrally and staff can liaise directly with these services regarding individual students. The University provides a wide variety of services such as for

example, the dyslexia support, note takers, sign language interpreters and more general support workers for students with mobility difficulties as well as special examination provision. During the review period, the department has taught, assisted and supported many students with a wide variety of disabilities. These include students with dyslexia, dyspraxia, visual impairment, epilepsy, audio impairment, mobility and muscular disabilities. Examples of the support given include providing materials in alternative forms and ensuring that room locations are appropriate for wheelchair users. The symbolic nature of Mathematics means that successful note taking is assisted considerably by having some appreciation of how Mathematics should look on the page. In the past, it has sometimes been found challenging to recruit support workers to act as note takers or amanuenses. In such cases academic staff have been contacted by central staff and have become involved to try and find solutions where needed.

This support provision is common to all undergraduate programmes within the Department, and since the MMath is an undergraduate programme it is appropriate that the same support is available to MMath students.

Careers sessions are organised for all students on Mathematics programmes, and guidance is also provided by the Faculty's Placements Officer. Students on the MMath course will be able to take a placement year after their second year. The Placements Officer posts details of vacancies on the Department's placements page on Moodle, although students are also able to find their own placement if they would prefer. Students are responsible for obtaining a placement position, and no guarantees of placement availability are made by the Department.

SECTION 8: GRADUATE EMPLOYABILITY

While many students graduating from this course will choose to undertake research in Mathematics or a related discipline, students graduating from this course are able to follow an extensive range of career opportunities. Examples include:

Industrial research and development analyst
Mathematical modeller
Financial analyst
Scientific research analyst
Risk assurance associate
Postgraduate research assistant

SECTION 9: LINKS WITH EMPLOYERS

The Department has extensive links with local employers and the Faculty has even broader professional links with businesses in every sector of the economy. This will enable students to work on industrial problems during their group project, enhancing their employability. Currently graduates in Mathematics follow widely varying career paths in a very diverse range of professions but it is a strategic objective to build stronger links with companies to allow students with an interest in applied mathematics to participate in a placement year to grow and improve the existing reputation of the Department.

SECTION 10: QUALITY MANAGEMENT

Our robust quality management practices include:

- Rigorous admission procedures
- Feedback from students in the annual module evaluations
- Annual evaluations of the programme by External Examiners
- Annual Programme Reviews
- Six yearly Periodic Reviews
- Subject Committees and Subject Away Days
- Student Representative System

The programme also conforms to the structure and regulations of the University's Undergraduate Modular Programme and Postgraduate Taught Frameworks. The course is subject to the University quality assurance procedures.