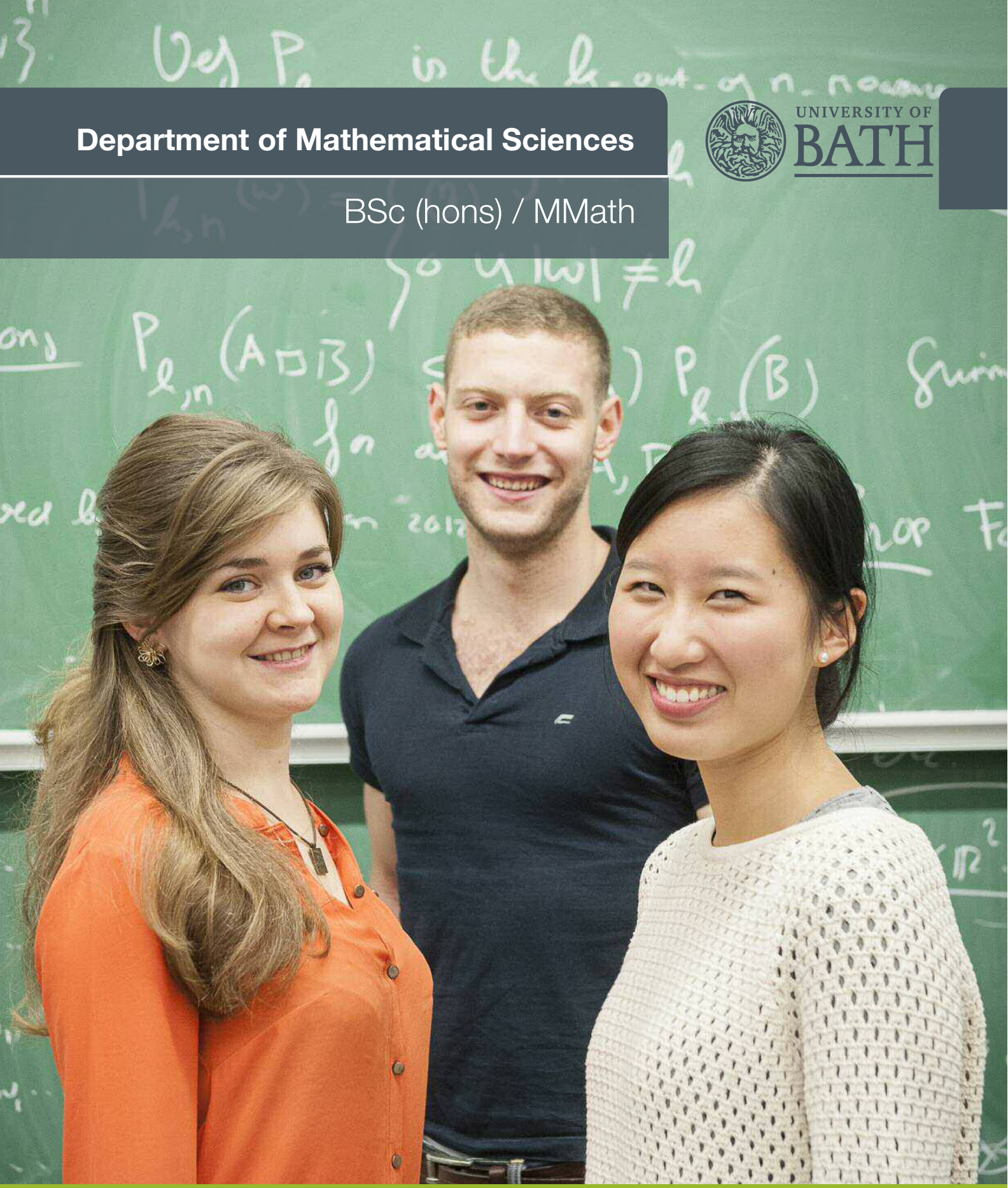
Department of Mathematical Sciences

UNIVERSITY OF BATH

BSc (hons) / MMath



Undergraduate Programmes Handbook

2017-2018

This handbook is available in electronic format via the Department Moodle (virtual learning environment) pages. The online version includes live links to information sources.

If you require a copy in large font or another format please contact the Undergraduate Programme Administrator at maths-adm-ug@bath.ac.uk.

Every effort has been made to ensure that the information contained within this handbook is accurate and up-to-date.

ACADEMIC YEAR 2017-18

These dates are correct at the time of going to print – please check on the University's semester dates website for up-to-date information during the year: http://www.bath.ac.uk/about/organisation/semester-dates/2017-18/index.html

Semester 1	Dates	Week(s)
New student arrivals	Saturday 23 September 2017 - Sunday 24 September 2017	
Welcome Week	Monday 25 September 2017 - Sunday 1 October 2017	0
Teaching Period	Monday 2 October 2017 - Friday 15 December 2017	1-11
Christmas vacation	Monday 18 December 2017 - Friday 5 January 2018	12-14
Semester 1 revision/ assessment period	Monday 8 January 2018 - Friday 26 January 2018	15-17
Inter-semester break	Monday 29 January 2018 - Friday 2 February 2018	18

Semester 2	Dates	Week(s)
Teaching Period	Monday 5 February 2018 - Friday 23 March 2018	19-25
Easter vacation	Monday 26 March 2018 - Friday 6 April 2018	26-27
Teaching Period	Monday 9 April 2018 - Friday 1 June 2018	28-31
Semester 2 revision/ assessment period	Monday 7 May 2018 - Friday 1 June 2018	32-35
Supplementary Assessment Period	Wednesday 15 August 2018 - Friday 24 August 2018	46-47

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Welcome

to the Department of Mathematical Sciences.

It is a pleasure to welcome you to the Department of Mathematical Sciences. The Department undertakes to deliver taught material that is relevant, high quality and up to date in a number of different settings – lectures, tutorials, workshops. In return, we expect you to show commitment by attending these classes and by putting a matching amount of effort into self-directed study.

As Directors of Studies, our role is to assist you to obtain the best degree result that you can achieve. We also want you to enjoy every aspect of student life in Bath. We hope you will look back on your time here as a key element in defining your future.

Dr Merrilee Hurn

Professor Alastair King

Professor Hartmut Logemann

Director of Studies (DoS) Team

About This Handbook

This Handbook is intended for all students studying on the BSc(Hons) Mathematics, BSc(Hons) Mathematical Sciences, BSc(Hons) Mathematics and Statistics, BSc(Hons) Statistics and the MMath (all courses have the option of a Study Year Abroad or placement year in industry) in the academic year 2017/18.

Please note that the contents of this Handbook are accurate at Friday 8th September 2017 but that information may sometimes be subject to change after this Handbook has been issued.

- While this Handbook signposts information about **regulations for student**s, it does not have regulatory status itself, and the Regulations available online (Regulations for Students: www.bath.ac.uk/regulations and Assessment Regulations: www.bath.ac.uk/registry/nfa) are the most up-to-date and take precedence over the contents of this Handbook.
- For further information about unit and programme changes, see the **Unit and programme changes** section in this Handbook.

If in doubt about what applies to you, or if your circumstances change (for example if you are returning from a suspension of study, or transferring to a different programme) please contact your Director of Studies Team at maths-dos@bath.ac.uk for advice.

The Department

Organisation

The Department of Mathematical Sciences is led by the Head of Department, currently Professor Paul Milewski. The Head of Department directs all aspects of the Department, with operational input from a number of nominated role-holders and a number of advisory committees.

Communication

The key staff you are most likely to come across in the course of your studies are listed on Page 7.

Email

Email is the method that staff will generally use to contact you and the method by which they prefer you to contact them. Your tutors and lecturers will use email to tell you about times for tutorials and meetings as well as any lectures or workshops which have to be rearranged at short notice.

Your University email account is the only account that is used for communications. It is your responsibility to ensure that your email account does not become over full as this will prevent new emails reaching you. IT support is provided by BUCS and you can find information on setting up and managing your account on their main page www.bath.ac.uk/bucs.

Student pigeon-holes

Student pigeon-holes are located in 4 West Level 1 Foyer. You should check and empty your pigeon-hole regularly so that it does not become overfull. Please do not use the Department address for personal mail.

Moodle

Our virtual learning environment, Moodle, is used extensively; information will be regularly provided at department, programme and unit level.

Department Office

The Department Office is located in 4 West 2.13, just off the Parade. If you want to contact the department, and you don't know where to go or who to see, your first point of contact should always be the Department Office.

Websites

The University website provides you with lots of relevant information. You can find out your timetable from the website, your unit lecturer, syllabus details of the units you are taking, placements opportunities, etc. The main Bath University internal website is a great place to start from: www.bath.ac.uk/students/

You will find information on your programme of studies on the University of Bath internal website and on the Maths Undergraduate Moodle Zone: go.bath.ac.uk/mathsmoodle

Emergency Telephone Numbers:

Internal Phone	Dial 666
External Phone	Dial 01225 383 999

Key Contacts

Personal Tutor

Each student is allocated to a member of academic staff who acts as their Personal Tutor. The Personal Tutor provides a first point of contact for academic advice or advice on obtaining additional help if health problems occur or personal circumstances are affecting your academic performance.

Unit Convenors

A Unit Convenor has responsibility for the delivery of all aspects of a unit. This person will normally deliver the main lectures within a unit and will normally have prepared the course materials. If you have problems with the running of a unit you should normally approach the Unit Convenor about it in the first instance.

Course Tutors

Course Tutors give advice and support about your degree programme and optional unit choices. An up to date list of course tutors can be found on the Maths Undergraduate Moodle Zone. Current 2017/2018 course tutors are:

Dr Xiuping Su - BSc Mathematics and BSc in Mathematical Sciences

Dr Jey Sivaloganathan – MMath

Dr Ilaria Prosdocimi – BSc in Maths and Statistics, BSc in Statistics

Dr Alex Cox – BSc / MMath with Study Year Abroad

If you wish to change your degree programme or an optional unit, see "Requesting unit or programme changes" and related sections of the handbook.

The Director of Studies Team (DoS team)

The Director of Studies Team is responsible for managing the undergraduate programmes offered by the Department; the team's responsibilities include the development of the curriculum and its delivery, quality management and enhancement, the overview and balance of assessment, student support issues, as well as pastoral and welfare care. To contact the DoS team, send an email to maths-dos@bath.ac.uk or ask at the Department Office.

Placements Officer

The Placements Officer for the Department is currently Sally Lewis. Sally has oversight of all arrangements to help students gain a placement opportunity and the student support and assessment of students on placement. To contact Sally, send an email to S.L.Lewis@bath.ac.uk or visit the Placements Office in 3 West 3.2c.

Coordinator of the Staff-Student Liaison Committee (SSLC)

The SSLC is a venue for staff-student contact. The committee meets twice per term. Here students receive information and are consulted on matters related to the teaching and the curriculum within the department. The SSLC is also important for providing a forum for students to put their views and canvas opinion. The committee consists of a member of the DoS team and representatives from staff, undergraduate and postgraduate students. The SSLC coordinator is currently Dr Ben Adams. Contact information for your student representatives can also be found on the Maths Undergraduate Moodle zone.

The Faculty of Science Undergraduate Administration Team

The Faculty of Science Undergraduate Administration Team are responsible for supporting the administration of undergraduate teaching in our department. They can be contacted via the Department Office.

The Individual Mitigating Circumstances Team

If you have a problem that prevents you from doing your best in an assessment, you may be able to apply for Individual Mitigating Circumstances (IMC). Our IMC Officers Dr Vangelis Evangelou and Professor Jey Sivaloganathan will be able to advise you.

However, with extension requests for assessed coursework before the due date, please contact the DoS Team.

Staff in the Department

Your courses will be taught by the following members of staff:

Member of Staff	Email Address	Room Number	Phone Number
Dr Ben ADAMS	b.adams@bath.ac.uk	4W 4.6	6320
Dr Karim ANAYA-IZQUIERDO	k.anaya-izquierdo@bath.ac.uk	4W 4.13	4644
Dr Nicole AUGUSTIN	n.h.augustin@bath.ac.uk	4W 5.14	6007
Prof Dorothy BUCK	d.buck@bath.ac.uk	4W 5.18	6002
Prof Chris BUDD	c.j.budd@bath.ac.uk	4W 5.17	6241
Prof Francis BURSTALL	f.e.burstall@bath.ac.uk	4W 3.39	6999
Prof David CALDERBANK	d.m.j.calderbank@bath.ac.uk	4W 3.41	6219
Dr Kirill CHEREDNICHENKO	k.cherednichenko@bath.ac.uk	4W 1.8	6891
Dr Thomas COTTRELL	t.p.cottrell@bath.ac.uk	6W 1.25b	5126
Dr Alex COX	a.m.g.cox@bath.ac.uk	6W 1.13	6187
Dr Alastair CRAW	a.craw@bath.ac.uk	4W 3.49	5327
Prof Jonathan DAWES	j.h.p.dawes@bath.ac.uk	4W 4.12	6223
Dr Evangelos EVANGELOU	e.evangelou@bath.ac.uk	4W 4.7	5673
Dr Jonathan EVANS	j.d.evans2@bath.ac.uk	6W 1.18	6994
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Dr Chris GUIVER	c.guiver@bath.ac.uk	4W 2.12	4150
Dr Simon HARRIS	s.c.harris@bath.ac.uk	4W 3.36	6015
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Prof Andreas KYPRIANOU	a.kyprianou@bath.ac.uk	4W 4.17	6200
Prof Hartmut LOGEMANN	h.logemann@bath.ac.uk	4W 5.13	6008
Dr Apala MAJUMDAR	a.majumdar@bath.ac.uk	4W 1.12	5321
Dr Karsten MATTHIES	k.matthies@bath.ac.uk	6W 1.25c	3858
Prof Paul MILEWSKI	p.a.milewski@bath.ac.uk	4W 5.19	6224
Prof Roger Moser	r.moser@bath.ac.uk	4W 4.16	6699
Dr Eike MÜLLER	e.mueller@bath.ac.uk	4W 2.17	6470
Dr Johannes NORDSTRÖM	j.nordstrom@bath.ac.uk	4W 1.10	4479
Dr Tiago PEIXOTO	t.peixoto@bath.ac.uk	4W 5.6	3789

Member of Staff	Email Address	Room Number	Phone Number
Dr Ilaria PROSDOCIMI	i.prosdocimi@bath.ac.uk	4W 4.14	6603
Mr Steve RAPER	s.l.raper@bath.ac.uk	6W 1.7	4642
Dr Martin REED	m.b.reed@bath.ac.uk	6W 1.23	6186
Dr Matthew ROBERTS	m.i.roberts@bath.ac.uk	4W 1.13	5325
Dr Tim ROGERS	t.c.rogers@bath.ac.uk	4W 3.37	6457
Prof Gregory SANKARAN	g.k.sankaran@bath.ac.uk	4W 5.16	6220
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Dr Jane WHITE	k.a.j.white@bath.ac.uk	4W 4.15	6242
Dr Kit YATES	c.yates@bath.ac.uk	4W 2.11	6605
Prof Johannes ZIMMER	j.zimmer@bath.ac.uk	6W 1.8	6097

A full list of staff in the Department is available via the Maths Undergraduate Moodle Zone.

Expectations

It is a University Regulation that you attend regularly. If circumstances are such that you are not able to do so, then please contact your Director of Studies to discuss your situation and agree an appropriate course of action. See Regulation 3: www.bath.ac.uk/regulations

Attendance

You are expected to attend all lectures on your timetable and attendance will be randomly checked by register.

Frequently Asked Questions

Where can I get help and advice if I need it?

The Maths Undergraduate Moodle Zone contains the answers to the majority of questions or can signpost you to places where you can get further help.

go.bath.ac.uk/mathsmoodle

Your Personal Tutor should also be able to assist you, or, if they are unable to, you can contact the Director of Studies Team. The Department Office can assist with administrative queries about your course, tutorial group, handing in work etc. If you find yourself in financial difficulties or personal difficulties you should seek advice from the Student Services centre located in the entrance to 4W.

What do I do if I am too ill to attend a lecture or tutorial?

You should notify your Personal Tutor by email if you miss more than one lecture or tutorial through illness. You should also let your unit tutor know if you are going to miss a tutorial.

How do I get support if I have a disability or am diagnosed with a medical condition?

If you have a disability or medical condition, or are diagnosed with one whilst you are here, and require extra support you should contact Student Services located in the entrance to 4W or email studentservices@bath.ac.uk. They will assess your needs and make special provisions as necessary.

What do I do if I am too ill to attend an examination or something unexpected happens before an exam/coursework deadline which may affect my performance?

We recommend that students take examinations if at all possible. It is essential that you inform the department's Mitigating Circumstances Team and complete an IMC form as soon as possible, ideally before you take the examination or before the coursework deadline, but certainly no later than three days after the first affected examination.

How can I make changes to my degree programme or units?

After consultation with your Personal Tutor, you should complete the relevant online form found in the "Making Changes" section of the Maths Undergraduate Moodle Zone. There is no need for First Year students to make any changes to their programme of study until mid-semester 2, unless they wish to transfer out of the Department, in which case they should speak directly to one of the Director of Studies team.

Degree programmes

Programmes on offer

The Department of Mathematical Sciences provides full-time Honours degree programmes leading to two qualifications: Bachelor of Science (BSc) and Master of Mathematics (MMath). All BSc programmes and MMath Programmes are available with placement options. There are also BSc and MMath programmes with a Study Year Abroad. Additionally, the BSc/MSci degree programmes in Mathematics and Physics are offered jointly with the Department of Physics, who administer these degree programmes, there are a BSc and MComp Computer Science and Mathematics degree programme administered by the Department of Computer Science and there is a BSc Economics and Mathematics degree programme administered by the Department of Economics.

MMath degree programme

The MMath (Master of Mathematics) is a four-year full-time 'Undergraduate Masters' degree programme, on which students may specialise in Pure and/or Applied Mathematics or may study a broader curriculum involving Mathematics and some areas of Computing and/or Statistics. There is a higher requirement for progression than on the BSc courses. Level 4 units must make up at least 60 of the 120 credits studied in the final two years. Although the MMath qualification is highly regarded by employers, this programme is primarily intended for mathematically-gifted students who aim to go on to industrial or academic research in mathematics.

BSc degree programmes

The Department of Mathematical Sciences offers BSc Honours degree programmes in the following subject areas.

- *Mathematics* - for students wishing to specialise predominantly in Pure and/or Applied Mathematics.
- *Mathematics and Statistics* - for students wishing to study Statistics while retaining an interest in related areas of Mathematics.
- *Statistics* - for students wishing to specialise predominantly in Statistics.
- *Mathematical Sciences* - for students preferring to study a broader range of subjects (including Management, Economics, Physics and Computer Science).
- *Mathematics and Physics* – for students wishing to study Mathematics and its application to problems in Physics. This degree is offered jointly with the Department of Physics who also administer the degree programme.
- *Computer Science and Mathematics* - for students wishing to study Mathematics and Computing. This degree is offered jointly with the Department of Computer Science who also administer the degree programme.
- *Economics and Mathematics* – for students wishing to study Mathematics and Economics. This degree is offered jointly with the department of Economics who administer the degree programme.

BSc and MMath with Placement

All our BSc programmes can be taken with a placement year in industry. The first two years and the fourth year are spent in full-time study at the University and comprise

Years 1, 2 and 3 of the corresponding three year degree programme. Students spend their third year in a professional placement working in a commercial company, a research establishment, the Civil Service or other organisation. This placement year normally comprises one twelve month period of training in a single establishment.

MMath students may spend a placement year in industry as year 3 of a longer 5 year programme.

More information on Placements can be found on page 42 of this handbook.

Study Year Abroad (SYA)

As an alternative to taking a placement year, BSc students can take their third year in full-time study at a university outside the UK, through the EU Erasmus scheme. The Department has exchange links with a number of universities in Austria, Germany, Poland, France, Italy, the Netherlands and Singapore. This SYA year is additional to the three years of study at Bath.

MMath students can also take a SYA year, but in this case it replaces the 3rd year of the 4 year MMath programme. In addition to the European institutions, there are a small number of study places at institutions in Canada, the USA, New Zealand and Australia; these are mostly awarded by University-wide competition.

To be considered for the Study Year Abroad option or for work placement abroad, BSc students must obtain a Year 1 average of at least 60%, and MMath students must achieve at least 65%, with no failed units. This level of performance must be maintained in the Year 2 Semester 1 units, otherwise any offer made may be withdrawn. Students must also be sufficiently competent in the language of the country in which they wish to study/work. Because SYA places depend on exchange agreements, the award of a SYA place is not guaranteed. Students who meet the criteria and apply successfully for a place, will be transferred to the relevant SYA programme in Semester 2 of Year 2. For further information, see the Maths Undergraduate Moodle Zone or the SYA Tutor.

Programme structure

Please note that the content of the programme description below is correct at the time of production of this Handbook and that programmes and units may be subject to reasonable change (see **Unit and Programme Changes** below).

Current versions of unit and programme descriptions are available via the online Unit and Programme Catalogues: www.bath.ac.uk/catalogues

Units

Within your programme of study, there are compulsory units (those units in a programme which must be taken by every student registered on the programme), and optional units (those units you may choose from a range of options).

To view available units access the University's online Programmes & Units Catalogue, select the correct year and follow the links to your programme

go.bath.ac.uk/catalogue.

Choosing your units

During the option choices period in April/May, you will be required to specify the units you want to take the following year. This is done by entering them online on SAMIS, the University's student record system.

To select your units consult the online Programme & Unit Catalogues for the relevant year of study go.bath.ac.uk/catalogue.

You should also attend the Department 'Options Day' event normally held around this time.

Some units run only every other year, some units may be withdrawn and new units may be added, so **it is essential to use the online catalogue for the appropriate year and not just to look at the current one**. There is detailed information on selecting units on the Maths Undergraduate Moodle Zone go.bath.ac.uk/mathsmoodle.

The Course Tutors can offer advice about options and are listed on the Maths Undergraduate Moodle Zone. You should also speak to your personal tutor about your options and get their approval before entering them online. If you take units that are not consistent with the scheme for your degree programme, or the rules given in this section, you may be unable to graduate.

It is your responsibility to ensure you study a set of units each year consistent with the degree requirements.

It is very important that you choose your units as carefully as possible. You may not be able to change units at a later date (e.g. rooms may be full, timetables may clash). Any request for changes after the online selection has closed must normally have a good reason (e.g. change of degree programme) and must be approved by the DoS team. Online forms to request a change of units or degree programme can be found on the Maths Undergraduate Moodle Zone.

In Year 3/4/5 some degree programmes allow students to select a unit chosen from "any other units approved by the Director of Studies", known as "DoS approved units". These may typically be Language units or units in Education, Economics or Management. There is up to date information about DoS approved units in the Maths Undergraduate Moodle Zone. Level 1 units are not acceptable in Year 3 and level 2 units are not normally acceptable in Year 4 of the MMath.

In addition to the specified programme for the year, students are also permitted to take one 6-credit unit or one or two 3-credit units as extra units. These will not count for progression or towards the degree, but they will be included on the student's transcript. The main extra units are 3-credit Language units.

For a list of such units see the Programme & Unit Catalogue:

go.bath.ac.uk/catalogue.

In Year 3, one level 3 6-credit language unit per semester may be taken as a DoS approved unit provided the preceding stage units for that language have been taken as additional units in Years 1 and 2. See the Maths Undergraduate Moodle Zone for more details.

Changing programme

Although students initially register for one particular degree, in many cases it is possible to change to a different degree programme within the department.

Students may change the subject area of their degree (e.g. BSc Mathematics to BSc Statistics) PROVIDED that their scheme of study thus far satisfies the appropriate rules and regulations of the new programme, and subject to the approval of the Director of Studies Team (see section below). Transfers may also be possible if the programme of study of the original and desired programmes have a high degree of commonality. During

their first year, students may also apply to transfer from one degree to another (e.g. from a three year full-time BSc degree programme to a four year placement programme). To transfer from a BSc programme to MMath, you must normally have satisfied the MMath requirements throughout the course. There is however a Recovery route for students who have been transferred to the BSc from the MMath to return to the MMath subject to strong performance in subsequent years. The latest date for such a transfer is Christmas of the final year of the BSc. You should enquire about the funding implications of extending your degree programme.

Requesting unit or programme changes

Please register any change of academic circumstance, including change of optional units, with the University by logging on to the Maths Undergraduate Moodle Zone; scroll down to the section entitled 'Programmes, Assessment and Progression' and click on the relevant webform See: go.bath.ac.uk/mathsmoodle.

Please answer all the questions on the form that you can, even if they do not seem particularly relevant to you. The form will then be sent electronically to the course tutor; they may approve your changes straight away or request to meet you if the decision is not straightforward and you haven't already discussed it with someone in the Department. Once your changes have been approved, you will receive an email message to confirm this, but it may take a while for the changes to appear in SAMIS.

It is not possible to change unit choices after the unit selection period around April/May except under exceptional circumstances such as a change in degree programme. Such exceptional changes must be approved by the Director of Studies Team.

Structure and content

The academic year is organised into two fifteen-week semesters, each composed of eleven teaching weeks followed by periods of revision and assessment - Semester 1 starts in October and Semester 2 starts in February. There are the usual Christmas, Easter and Summer vacations. Degree programmes at Bath are modular and students are required to study the equivalent of five 6 credit modules or 'units' in each semester. As students pass each unit they will be awarded the associated 'credit' (compatible with the European Credit Transfer System). A full year of study consists of 60 credits.

All unit descriptions include "private study" as part of the unit content. This gives an indication of the time that it is recommended you spend outside the formal teaching timetable on various aspects of the material covered in the unit. Each unit includes a significant proportion of private study, not including revision for assessments. Formal contact with academic staff will generally account for a little under half this time, so private study should be seen as an important part of the unit overall and, in particular, your learning of the subject matter covered.

You cannot expect to pass the unit simply by attending the lectures and tutorials – you must put in the hours of private study too!

Each unit is ascribed a "level". Within the undergraduate curriculum the levels are:

Level 1	Certificate or C Level
Level 2	Intermediate or I Level
Level 3	Honours or H Level
Level 4	Masters or M Level

Each unit is identified by a unit code, e.g. MA30089 indicates a Level 3 unit delivered by Mathematical Sciences; the 0089 identifies the particular unit – as these identifiers are unique, staff may refer to this unit simply as M89. Most undergraduate MA units are worth 6 credits, and delivered in a single semester; in Year 1 we also have 12-credit "double units" (which are all-year, i.e. delivered over both semesters) and some project units in later years carry 12 or more credits. To find the most up to date information about current unit options go to go.bath.ac.uk/catalogues and select the appropriate year of study. Unit availability may change from year to year**.**

Minimum levels of credit

When choosing your set of units to study each year from the lists of mandatory and optional units for your programme, there are some additional considerations: at the end of your degree programme, you must have earned a minimum number of credits at each Level, as follows:

Qualification	Total credits	Minimum levels of credit			
		C	I	H	M
MMath	240	60	48	48	60
BSc (hons)	180	60	48	48	

These requirements are ensured by the following departmental regulations (assuming all your units are 6-credit units):

- In Year 2, you may take a maximum of two units at Level 1; the other eight must be Level 2 units;
- BSc (Hons) students must take at least eight units at Level 3 or 4 in their final year and none at Level 1;
- Of the twenty units taken by MMath students in their last two years, at least ten must be at Level 4, and at least a further eight must be at Level 3 (or higher) and none may be at Level 1;
- Level 2 units may not be taken in the last year of the MMath without DoS approval;
- BSc (Ord) students must take at least five units at Level 3 in their final year.

MMath

The Department offers the following Master of Mathematics courses:

- MMath Master of Mathematics USMA-AFM14
- MMath Master of Mathematics (with Study Year Abroad) USMA-AAM15
- MMath Master of Mathematics (with year long Placement) USMA-AKM15

General information

Based at the University of Bath campus the programme is designed to enable students to understand, analyse, evaluate and apply the knowledge and skills of mathematics in both theoretical and practical contexts and to lay the foundations for possible further study.

The first year provides students with a necessary broad foundation in mathematics, statistics and computing. The year is common for most degree programmes offered by the Department of Mathematical Sciences allowing students to exploit the flexibility within and between the programmes.

The programme for the second year contains a compulsory core of pure mathematics. For the remainder, students are able to choose options from applied mathematics, statistics, computing or physics.

4 year MMath students proceed to the third year of the programme, which may be spent studying abroad. In both this and the final year, MMath students are able to choose from a wide range of options in both pure and applied mathematics, one of which may be a research project. The programme may also include units from statistics, computing, physics or other subject areas.

5 year MMath students spend year 3 on placement and then return to the University for two more years of study corresponding to years 3 and 4 of the 4 year MMath.

Educational aims

The aims of the Department of Mathematical Sciences build upon the mission statement of the University "to advance learning and knowledge by teaching and research, particularly in science and technology, and in close association with industry and commerce".

For the MMath programme, the aims are:

- to provide a stimulating and supportive environment, which encourages students to be receptive to new ideas and to attain their full academic potential;
- to provide students with a broad and balanced foundation of knowledge, theoretical underpinning and practical skills in mathematics, statistics and computing;
- to develop in students the ability to apply their mathematical knowledge and skills to the solution of problems;
- to offer students a flexible educational framework that enables them to specialise or maintain a broad course of study;
- to produce graduates capable of pursuing a professional career or of proceeding to further study or research;
- to prepare students for research in academia or industry.

Intended learning outcomes

The programmes provide opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the following areas:

Knowledge and understanding

- demonstrate knowledge and understanding of the fundamental concepts, principles, theories and results of mathematics;
- construct and explain the meaning of complicated statements using mathematical notation and language;
- understand and work with formal definitions;
- state and prove key theorems from various branches of mathematics;
- demonstrate knowledge in depth of a variety of mathematical topics;
- demonstrate a mastery of selected advanced theories based on substantial background knowledge.
- MMath graduates should have a greater breadth and depth of mathematical skills than is possible within a three year programme, including a substantial body of knowledge and skill at Masters level.

Intellectual skills

- demonstrate skill in mathematical reasoning, manipulation and calculation;
- construct rigorous proofs;
- demonstrate proficiency in different methods of mathematical proof.

Professional practical skills

- construct, and critically assess, mathematical models for real-world problems;
- formulate methods of solution for a variety of mathematical problems and provide a theoretical justification for the methods;
- solve and/or analyse problems arising from a variety of situations, investigate the properties of solutions and interpret the results in terms of the original problem;
- program a range of mathematical and statistical applications;
- apply numerical methods to the solution of mathematical problems, demonstrate an awareness of their advantages and limitations and of the practical issues involved in their implementation;
- appreciate the relationship between fundamental concepts of mathematics and their application in other areas of mathematics or other disciplines.

Transferrable skills

- communicate effectively with a wide range of individuals using a variety of means;
- work effectively as part of a team;
- make efficient use of computers for acquiring, analysing and presenting information;
- think logically and analytically;
- apply analytical methodology to problems in other disciplines;
- assess numerical data critically.

In the case of students whose degree programme incorporates a professional placement, they should also be able to:

- demonstrate an understanding of the general structure of their employing organisation and of the particular significance of the work they have undertaken;
- demonstrate enhanced personal skills such as communication skills, both oral and written, planning and time management skills, problem-solving and analytical skills, decision-making skills;
- demonstrate confidence in their own ability to appraise new information critically and to operate as part of a team.

In the case of students whose degree programme incorporates a Study Year Abroad, they should be able to:

- work effectively in a culture different from that of the UK and, where appropriate, operate at a scientific level in the language of the country concerned.

Programme information

MMath programme codes:

- USMA-AFM14 4 years Full-time
- USMA-AAM15 4 years Full-time with Study Year Abroad
- USMA-AKM15 5 years Full time with year long Placement

The MMath programmes have a Designated Alternative Programme (DAP), which is USMA–AFB15 BSc (Hons) Mathematical Sciences, and two exit Awards USMA-AFL15 Diploma in Higher Education and USMA-AFC15 Certificate in Higher Education.

Approving body and date of approval – USMA-AFM14 & USMA-AAM15: Faculty of Science Teaching & Quality Committee (February 2008). USMA-AKM15: Senate (December 2013).

Year 1 - common to all programmes

Year 1 units are all Compulsory Units

All Year Unit – 12 credits per unit
MA10207 Analysis 1
XX10190 Programming and discrete mathematics 1
Semester 1: units – 6 credits per unit
MA10209 Algebra 1A
MA10211 Probability & statistics1A
MA10230 Methods & applications 1A
Semester 2 units – 6 credits per unit
MA10210 Algebra 1B
MA10212 Probability & statistics 1B
MA10236 Methods & applications 1B

Years 2, 3, 4 and 5

To find the most up to date information about the content of your programme and any current unit options go to go.bath.ac.uk/catalogues and select the appropriate year of study. Unit availability may change from year to year.

BSc (Hons) in Mathematics

The Department offers the following courses in Mathematics:

- BSc (Hons) Mathematics USMA-AFB13
- BSc (Hons) Mathematics (with Thick Sandwich Placement) USMA-AKB14:
- BSc (Hons) Mathematics (with Study Year Abroad) USMA-AAB14

General information

Based at the University of Bath campus the programme is designed to enable students to understand, analyse, evaluate and apply the knowledge and skills of mathematics in both theoretical and practical contexts and to lay the foundations for possible further study. Those undertaking a Professional Placement will also benefit from the enhancement of their knowledge and skills in a professional context.

The first year provides students with a necessary broad foundation in mathematics, statistics and computing. The year is common for most degree programmes offered by the Department of Mathematical Sciences allowing students to exploit the flexibility within and between the programmes.

The programme for the second year contains a compulsory core of both pure and applied mathematics. For the remainder, students are able to choose options from statistics, computing or physics.

Three year full-time BSc students proceed to the final year of the programme, whereas those on the **four year variants** spend a year on professional placement or a year studying abroad before proceeding to the final year. In the final year of the programme, students are able to choose from a wide range of options in both pure and applied mathematics, one of which may be a research project. The programme may also include some units from statistics, computing, physics or other subject areas.

Educational aims

The aims of the Department of Mathematical Sciences build upon the mission statement of the University "to advance learning and knowledge by teaching and research, particularly in science and technology, and in close association with industry and commerce".

For the degree courses in Mathematics, the aims are:

• to provide a stimulating and supportive environment, which encourages students to be receptive to new ideas and to attain their full academic potential;

- to provide students with a broad and balanced foundation of knowledge, theoretical underpinning and practical skills in mathematics, statistics and computing;
- to develop in students the ability to apply their mathematical knowledge and skills to the solution of problems;
- to offer students a flexible educational framework that enables them to specialise or maintain a broad course of study;

- to produce graduates capable of pursuing a professional career or of proceeding to further study or research.

Intended learning outcomes

The programmes provide opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the following areas:

Knowledge and understanding

- demonstrate knowledge and understanding of the fundamental concepts, principles, theories and results of mathematics;
- construct and explain the meaning of complicated statements using mathematical notation and language;
- understand and work with formal definitions;
- state and prove key theorems from various branches of mathematics.

Intellectual skills

- demonstrate skill in mathematical reasoning, manipulation and calculation;
- construct rigorous proofs;
- demonstrate proficiency in different methods of mathematical proof.

Professional practical skills

- construct, and critically assess, mathematical models for real-world problems;
- formulate methods of solution for a variety of mathematical problems and provide a theoretical justification for the methods;
- solve and/or analyse problems arising from a variety of situations, investigate the properties of solutions and interpret the results in terms of the original problem;
- program a range of mathematical and statistical applications;
- apply numerical methods to the solution of mathematical problems, demonstrate an awareness of their advantages and limitations and of the practical issues involved in their implementation;
- appreciate the relationship between fundamental concepts of mathematics and their application in other areas of mathematics or other disciplines.

Transferable skills

- communicate effectively with a wide range of individuals using a variety of means;
- work effectively as part of a team;
- make efficient use of computers for acquiring, analysing and presenting information;
- think logically and analytically;
- apply analytical methodology to problems in other disciplines;
- assess numerical data critically.

In the case of students whose degree programme incorporates a professional placement, they should also be able to:

- demonstrate an understanding of the general structure of their employing organisation and of the particular significance of the work they have undertaken;
- demonstrate enhanced personal skills such as communication skills, both oral and written, planning and time management skills, problem-solving and analytical skills, decision-making skills;
- demonstrate confidence in their own ability to appraise new information critically and to operate as part of a team;

In the case of students whose degree programme incorporates a Study Year Abroad, they should be able to:

- work effectively in a culture different from that of the UK and, where appropriate, operate at a scientific level in the language of the country concerned.

Programme information

BSc Mathematics programme codes:

USMA-AFB13	3 years Full-time
USMA-AKB14	4 years Full-time with Thick Sandwich Placement
USMA-AAB14	4 years Full-time with Study Year Abroad

There are two exit awards USMA-AFL15 Diploma in Higher Education and USMA-AFC15 Certificate in Higher Education.

Approving body and date of approval – Faculty of Science Teaching & Quality Committee (February 2008)

Year 1 - common to all programmes

Year 1 units are all Compulsory Units

All Year Unit – 12 credits per unit
MA10207 Analysis 1
XX10190 Programming and discrete mathematics 1
Semester 1: units – 6 credits per unit
MA10209 Algebra 1A
MA10211 Probability & statistics 1A
MA10230 Methods & applications 1A
Semester 2 units – 6 credits per unit
MA10210 Algebra 1B
MA10212 Probability & statistics 1B
MA10236 Methods & applications 1B

Years 2, 3 and 4

To find the most up to date information about the content of your programme and any current unit options go to go.bath.ac.uk/catalogues and select the appropriate year of study. Unit availability may change from year to year.

BSc (Hons) in Mathematical Sciences

The Department offers the following courses in Mathematical Sciences:

- BSc (Honours) Mathematical Sciences USMA-AFB15
- BSc (Honours) Mathematical Sciences (with Thick Sandwich Placement) USMA-AKB16
- BSc (Honours) Mathematical Sciences (with Study Year Abroad) USMA-AAB16

General information

Based at the University of Bath campus the programme is designed to enable students to understand, analyse, evaluate and apply the knowledge and skills in areas of the mathematical sciences in both theoretical and practical contexts. It is also designed to lay the foundations for possible further study. Those undertaking a Professional Placement will also benefit from the enhancement of their knowledge and skills in a professional context.

The first year provides students with the necessary broad foundation in mathematics, statistics and computing. This year is common for most degree programmes offered by the Department of Mathematical Sciences and this allows students to exploit the flexibility within and between our degree programmes.

The programme for the second year contains a compulsory core of pure mathematics. For the remainder, students are able to choose options from applied mathematics, statistics, computing or physics.

Students on the 3-year full-time programme then proceed to the final year of the programme whereas those on the 4-year variants spend a year on Professional Placement or a year studying abroad before proceeding to the final year. In the final year of the programme students are able to choose from a wide range of options in pure mathematics, applied mathematics, statistics, computing, physics or other subject areas. One of these may be a research project.

In addition to the specified programmes for the first and second years, students may also choose extra units. The most common example is that of students who wish to continue studying a language or who wish to start a language from scratch.

Educational aims

The aims of the Department of Mathematical Sciences build upon the mission statement of the University "to advance learning and knowledge by teaching and research, particularly in science and technology, and in close association with industry and commerce". For the BSc Mathematical Sciences programme, the aims are:

- to provide a stimulating and supportive environment, which encourages students to be receptive to new ideas and to attain their full academic potential;
- to provide students with a broad and balanced foundation of knowledge, theoretical underpinning and practical skills in mathematics, statistics and computing;
- to develop in students the ability to apply their mathematical knowledge and skills to the solution of problems;
- to offer students a flexible educational framework that enables them to specialise or maintain a broad course of study;

- to produce graduates capable of pursuing a professional career or of proceeding to further study or research.

Intended learning outcomes

The programmes provide opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the following areas:

Knowledge and understanding

- demonstrate knowledge and understanding of the fundamental concepts, principles, theories and results of the mathematical sciences;
- construct and explain the meaning of complicated statements using mathematical notation and language;
- understand and work with formal definitions;
- state and prove key theorems from various branches of the mathematical sciences;
- apply mathematical skills and reasoning within wider contexts such as physics, computing and economics.

Intellectual skills

- demonstrate skill in mathematical reasoning, manipulation and calculation;
- construct rigorous proofs;
- demonstrate proficiency in different methods of mathematical proof;

Professional practical skills

- construct, and critically assess, mathematical models for real-world problems;
- formulate methods of solution for a variety of mathematical, statistical and computing problems and provide a theoretical justification for the methods;
- solve and/or analyse problems arising from a variety of situations, investigate the properties of solutions and interpret the results in terms of the original problem;
- program a range of mathematical and statistical applications;
- apply numerical methods to the solution of mathematical problems, demonstrate an awareness of their advantages and limitations and of the practical issues involved in their implementation;
- appreciate the relationship between fundamental concepts of mathematics and their application in other areas of mathematics or other disciplines.

Transferable skills

- communicate effectively with a wide range of individuals using a variety of means;
- work effectively as part of a team;
- make efficient use of computers for acquiring, analysing and presenting information;
- think logically and analytically;
- apply analytical methodology to problems in other disciplines;
- assess numerical data critically.

In the case of students whose degree programme incorporates a professional placement, they should also be able to:

- demonstrate an understanding of the general structure of their employing organisation and of the particular significance of the work they have undertaken;
- demonstrate enhanced personal skills such as communication skills, both oral and written, planning and time management skills, problem-solving and analytical skills, decision-making skills;
- demonstrate confidence in their own ability to appraise new information critically and to operate as part of a team.

In the case of students whose degree programme incorporates a Study Year Abroad, they should also be able to:

- work effectively in a culture different from that of the UK and, where appropriate, operate at a scientific level in the language of the country concerned.

Programme information

BSc Mathematical Sciences programme codes:

USMA-AFB15	3 years Full-time
USMA-AKB16	4 years Full-time with Thick Sandwich Placement
USMA-AAB16	4 years Full-time with Study Year Abroad

There are two exit awards USMA-AFL15 Diploma in Higher Education and USMA-AFC15 Certificate in Higher Education.

Approving body and date of approval – Faculty of Science Teaching & Quality Committee (February 2008)

Year 1 - common to all programmes

Year 1 units are all Compulsory Units

All Year Unit – 12 credits per unit
MA10207 Analysis 1
XX10190 Programming and discrete mathematics 1
Semester 1: units – 6 credits per unit
MA10209 Algebra 1A
MA10211 Probability & statistics1A
MA10230 Methods & applications 1A
Semester 2 units – 6 credits per unit
MA10210 Algebra 1B
MA10212 Probability & statistics 1B
MA10236 Methods & applications 1B

Years 2, 3 and 4

To find the most up to date information about the content of your programme and any current unit options go to go.bath.ac.uk/catalogues and select the appropriate year of study. Unit availability may change from year to year.

BSc (Hons) in Mathematics & Statistics

The Department offers the following courses in Mathematics and Statistics:

- BSc (Hons) Mathematics and Statistics USMA-AFB01
- BSc (Hons) Mathematics and Statistics (with Thick Sandwich Placement) USMA-AKB02
- BSc (Hons) Mathematics and Statistics (with Study Year Abroad) USMA-AAB02

General information

Based at the University of Bath campus the programme is designed to enable students to understand, analyse, evaluate and apply the knowledge and skills in areas of the mathematical sciences in both theoretical and practical contexts. It is also designed to lay the foundations for possible further study. Those undertaking an Professional Placement will also benefit from the enhancement of their knowledge and skills in a professional context.

The first year provides students with the necessary broad foundation in mathematics, statistics and computing. This year is common for most degree programmes offered by the Department of Mathematical Sciences and this allows students to exploit the flexibility within and between our degree programmes.

The programme for the second year contains a compulsory core of pure mathematics, probability and statistics. For the remainder, students are able to choose options from algebra and applied mathematics.

Students on the 3 year full-time programme then proceed to the final year of the programme whereas those on the 4 year variants spend a year on professional placement or a year studying abroad before proceeding to the final year. In the final year of the programme students are able to choose from a wide range of options in mathematics, probability and statistics, one of which may be a research project. The programme may also include units from computing, physics or other subject areas.

Educational aims

The aims of the Department of Mathematical Sciences build upon the mission statement of the University "to advance learning and knowledge by teaching and research, particularly in science and technology, and in close association with industry and commerce". For the BSc Mathematics & Statistics programme, the aims are:

- to provide a stimulating and supportive environment, which encourages students to be receptive to new ideas and to attain their full academic potential;
- to provide students with a broad and balanced foundation of knowledge, theoretical underpinning and practical skills in mathematics, statistics and computing;
- to develop in students the ability to apply their mathematical knowledge and skills to the solution of problems;
- to offer students a flexible educational framework that enables them to specialise or maintain a broad course of study;
- to produce graduates capable of pursuing a professional career or of proceeding to further study.

Intended learning outcomes

The programmes provide opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the following areas:

Knowledge and understanding

- demonstrate knowledge and understanding of the fundamental concepts, principles, theories and results of mathematics, probability and statistics;
- construct and explain the meaning of complicated statements using mathematical notation and language;
- understand and work with formal definitions;
- state and prove key theorems from various branches of mathematics, probability and statistics;
- demonstrate knowledge and understanding of the principles of statistical modelling and analysis;

Intellectual skills

- demonstrate skill in mathematical and statistical reasoning, manipulation and calculation;
- construct rigorous proofs;
- demonstrate proficiency in different methods of mathematical proof;
- demonstrate proficiency in a variety of standard statistical tests.

Professional practical skills

- choose, fit and critically assess various statistical models for 'real-life' data;
- apply suitable methods of analysis to a variety of statistical problems, demonstrating an awareness of their advantages, limitations and required assumptions;
- formulate methods of solution for a variety of mathematical and statistical problems and provide theoretical justification for the methods;
- solve and/or analyse problems arising from a variety of situations, investigate the properties of solutions and interpret the results in terms of the original problem;
- program a range of mathematical and statistical applications;
- apply numerical methods to the solution of mathematical problems, demonstrate an awareness of their advantages and limitations and of the practical issues involved in their implementation;
- appreciate the relationship between fundamental concepts of mathematics and their application in other areas of mathematics or other disciplines.

Transferable Skills

- communicate effectively with a wide range of individuals using a variety of means;
- work effectively as part of a team;
- make efficient use of computers for acquiring, analysing and presenting information;
- think logically and analytically;

- apply analytical methodology to problems in other disciplines;
- assess numerical data critically.

In the case of students whose degree programme incorporates a professional placement, they should also be able to:

- demonstrate an understanding of the general structure of their employing organisation and of the particular significance of the work they have undertaken;
- demonstrate enhanced personal skills such as communication skills, both oral and written, planning and time management skills, problem-solving and analytical skills, decision-making skills;
- demonstrate confidence in their own ability to appraise new information critically and to operate as part of a team.

In the case of students whose degree programme incorporates a Study Year Abroad, they should also be able to:

- work effectively in a culture different from that of the UK and, where appropriate, operate at a scientific level in the language of the country concerned.

Programme information

BSc Mathematics & Statistics programme codes:

- USMA-AFB01 3 years Full-time
- USMA-AKB02 4 years Full-time with Thick Sandwich Placement
- USMA-AAB02 4 years Full-time with Study Year Abroad

There are two exit awards USMA-AFL15 Diploma in Higher Education and USMA-AFC15 Certificate in Higher Education.

Approving body and date of approval – Faculty of Science Teaching & Quality Committee (February 2008)

Year 1 - common to all programmes

Year 1 units are all Compulsory Units

All Year Unit – 12 credits per unit
MA10207 Analysis 1
XX10190 Programming and discrete mathematics 1
Semester 1: units – 6 credits per unit
MA10209 Algebra 1A
MA10211 Probability & statistics 1A
MA10230 Methods & applications 1A
Semester 2 units – 6 credits per unit
MA10210 Algebra 1B
MA10212 Probability & statistics 1B
MA10236 Methods & applications 1B

Years 2, 3 and 4

To find the most up to date information about the content of your programme and any current unit options go to go.bath.ac.uk/catalogues and select the appropriate year of study. Unit availability may change from year to year.

BSc (Hons) in Statistics

This section gives you background information on the programmes offered by the Department of Mathematical Sciences, explains how they are organised, and shows you how the programmes are structured.

The Department offers the following courses in Statistics:

- BSc (Honours) Statistics USMA-AFB05
- BSc (Honours) Statistics (with Thick Sandwich Placement) USMA-AKB06
- BSc (Honours) Statistics (with Study Year Abroad) USMA-AAB06

General Information

Based at the University of Bath campus the programme is designed to enable students to understand, analyse, evaluate and apply the knowledge and skills in areas of the mathematical sciences in both theoretical and practical contexts. It is also designed to lay the foundations for possible further study. Those undertaking a professional placement will also benefit from the enhancement of their knowledge and skills in a professional context.

The first year provides students with the necessary broad foundation in mathematics, statistics and computing. This year is common for most degree programmes offered by the Department of Mathematical Sciences and this allows students to exploit the flexibility within and between our degree programmes.

The programme for the second year contains a compulsory core of pure mathematics, probability and statistics. For the remainder, students are able to choose options from mathematics, computing or accounting and finance.

Students on the three year full-time programme then proceed to the final year of the programme whereas those on the four year variants spend a year on professional placement or a year studying abroad before proceeding to the final year. In the final year of the programme students are able to choose from a wide range of options in probability and statistics, one of which may be a research project. The programme may also include units from mathematics, computing, economics or other subject areas.

Educational Aims

The aims of the Department of Mathematical Sciences build upon the mission statement of the University "to advance learning and knowledge by teaching and research, particularly in science and technology, and in close association with industry and commerce". For the BSc Statistics programme, the aims are:

- to provide a stimulating and supportive environment, which encourages students to be receptive to new ideas and to attain their full academic potential;
- to provide students with a broad and balanced foundation of knowledge, theoretical underpinning and practical skills in mathematics, statistics and computing;
- to develop in students the ability to apply their mathematical knowledge and skills to the solution of problems;
- to offer students a flexible educational framework that enables them to specialise or maintain a broad course of study;
- to produce graduates capable of pursuing a professional career or of proceeding to further study.

Intended learning outcomes

The programmes provide opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the following areas:

Knowledge and understanding:

- demonstrate knowledge and understanding of the fundamental concepts, principles, theories and results of mathematics, probability and statistics;
- construct and explain the meaning of complicated statements using mathematical notation and language;
- understand and work with formal definitions;
- state and prove key theorems from various branches of mathematics, probability and statistics;
- demonstrate knowledge and understanding of the principles of statistical modelling and analysis.

Intellectual Skills:

- Demonstrate skill in mathematical and statistical reasoning, manipulation and calculation;
- construct rigorous proofs;
- demonstrate proficiency in different methods of mathematical proof;
- demonstrate proficiency in a variety of standard statistical tests.

Professional Practical skills:

- choose, fit and critically assess various statistical models for 'real-life' data;
- apply suitable methods of analysis to a variety of statistical problems, demonstrating an awareness of their advantages, limitations and required assumptions;
- formulate statistical problems, carrying out exploratory data analysis and tackling non-standard data;
- present results of statistical analysis in a clear report;
- formulate methods of solution for a variety of mathematical and statistical problems and provide theoretical justification for the methods;
- solve and/or analyse problems arising from a variety of situations, investigate the properties of solutions and interpret the results in terms of the original problem;
- program a range of mathematical and statistical applications.

Transferable Skills:

- communicate effectively with a wide range of individuals using a variety of means;
- work effectively as part of a team;
- make efficient use of computers for acquiring, analysing and presenting information;
- think logically and analytically;
- apply analytical methodology to problems in other disciplines;
- assess numerical data critically.

In the case of students whose degree programme incorporates a professional placement, they should also be able to:

- demonstrate an understanding of the general structure of their employing organisation and of the particular significance of the work they have undertaken;
- demonstrate enhanced personal skills such as communication skills, both oral and written, planning and time management skills, problem-solving and analytical skills, decision-making skills;
- demonstrate confidence in their own ability to appraise new information critically and to operate as part of a team.

In the case of students whose degree programme incorporates a Study Year Abroad, they should also be able to:

- work effectively in a culture different from that of the UK and, where appropriate, operate at a scientific level in the language of the country concerned.

Programme information

BSc Statistics programme codes:

- USMA-AFB05 3 years Full-time
- USMA-AKB06 4 years Full-time with Thick Sandwich Placement
- USMA-AAB06 4 years Full-time with Study Year Abroad

There are two exit awards USMA-AFL15 Diploma in Higher Education and USMA-AFC15 Certificate in Higher Education.

Approving body and date of approval – Faculty of Science Teaching & Quality Committee (February 2008)

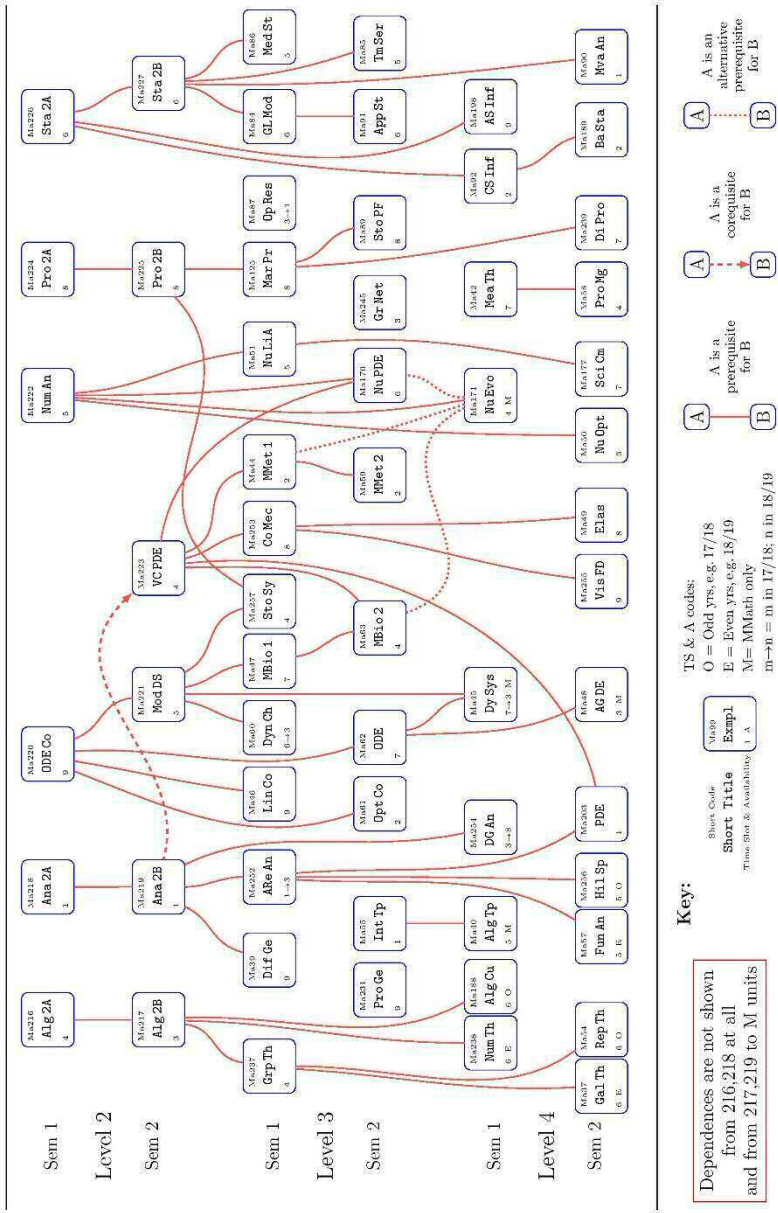
Year 1 - common to all programmes

Year 1 units are all Compulsory Units

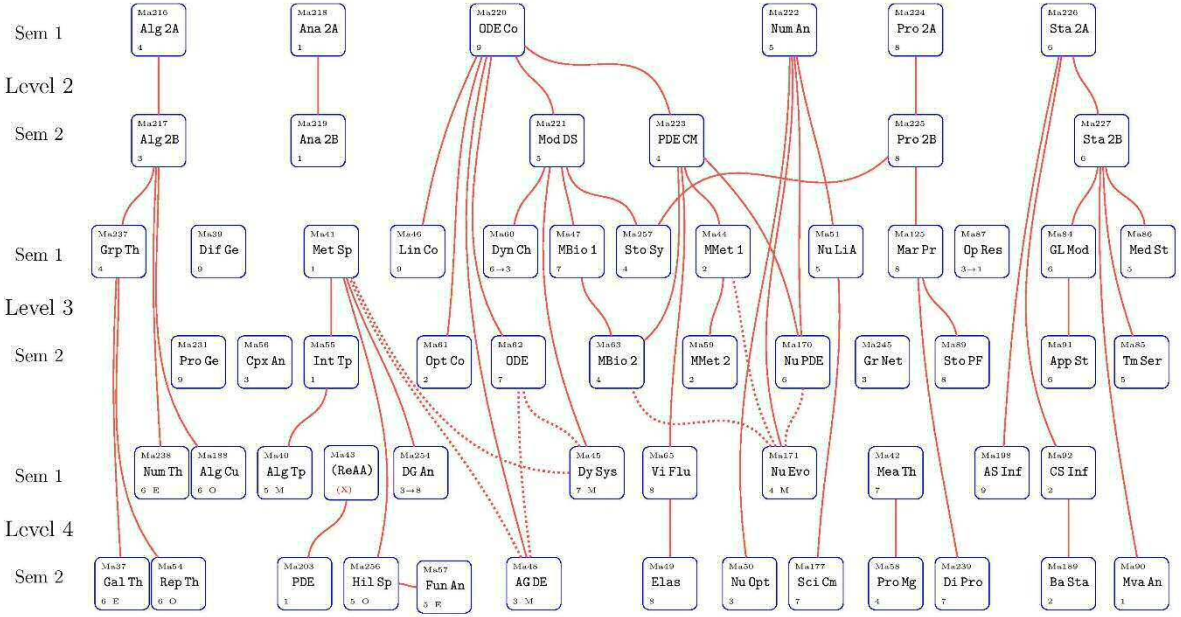
All Year Unit – 12 credits per unit
MA10207 Analysis 1
XX10190 Programming and discrete mathematics 1
Semester 1: units – 6 credits per unit
MA10209 Algebra 1A
MA10211 Probability & statistics 1A
MA10230 Methods & applications 1A
Semester 2 units – 6 credits per unit
MA10210 Algebra 1B
MA10212 Probability & statistics 1B
MA10236 Methods & applications 1B

Years 2, 3 and 4

To find the most up to date information about the content of your programme and any current unit options go to go.bath.ac.uk/catalogues and select the appropriate year of study. Unit availability may change from year to year.


Map of Level 2-4 Maths Units
Version Apr 2017(A) : for students taking Year 2 in 2016/17 or later
Sem 1
Level 2
Sem 2
Sem 1
Level 3
Sem 2
Sem 1
Level 4
Sem 2
Ma216 Alg 2A 4
Ma217 Alg 2B 3
Ma218 Ana 2A 1
Ma219 Ana 2B 1
Ma220 ODE Co 9
Ma221 Mod DS 3
Ma222 Num An 5
Ma223 VC PDE 4
Ma224 Pro 2A 8
Ma225 Pro 2B 8
Ma226 Sta 2A 6
Ma227 Sta 2B 6
Ma228 AMe An 1→3
Ma229 Num Th 6 E
Ma230 Grp Th 4
Ma231 Pro Ge 9
Ma232 Dif Ge 9
Ma233 Int Tp 1
Ma234 Alg Cu 6 O
Ma235 Alg Tp 5 M
Ma236 Lin Co 9
Ma237 Sto Sy 4
Ma238 Dyn Ch 6→3
Ma239 MBio 1 7
Ma240 Co Mec 8
Ma241 MBio 2 4
Ma242 ODE 7
Ma243 Opt Co 2
Ma244 MMet 1 2
Ma245 MMet 2 2
Ma246 Gr Net 3
Ma247 Nu LiA 5
Ma248 Nu PDE 6
Ma249 Nu Evo 4 M
Ma250 Gr Mod 6
Ma251 App St 6
Ma252 AS Inf 9
Ma253 Med St 3
Ma254 DG An 3→8
Ma255 Dy Sys 7→3 M
Ma256 Hil Sp 5 O
Ma257 Fun An 5 E
Ma258 PDE 1
Ma259 Rep Th 6 O
Ma260 Gal Th 6 E
Ma261 Vis PD 9
Ma262 AG DE 3 M
Ma263 Exmpl 1 A
Ma264 Elas 8
Ma265 Nu Opt 3
Ma266 Sci Cm 7
Ma267 Op Res 3→1
Ma268 Mar Pr 8
Ma269 Sto PF 8
Ma270 Pro Mg 4
Ma271 Mea Th 7
Ma272 Di Pro 7
Ma273 CS Inf 2
Ma274 Ba Sta 2
Ma275 Tm Ser 5
Ma276 Mva An 1
Key:
Short Code
Short Title
Time Slot & Availability
TS & A codes:
O = Odd yrs, e.g. 17/18
E = Even yrs, e.g. 18/19
M= MMath only
m→n = m in 17/18; n in 18/19
A
B
A is a prerequisite for B
A is a corequisite for B
A is an alternative prerequisite for B
Dependences are not shown from 216,218 at all and from 217,219 to M units

Map of Level 2-4 Maths Units Version Apr 2017(B) : for students who took Year 2 in 2015/16 or earlier



Dependences are not shown from 216,218,219

Key:

Short Code
Short Title
Time Slot & Availability
Ma99 Exmpl 1 A

TS & A codes:
O = Odd yrs, e.g. 17/18
E = Even yrs, e.g. 18/19
M = MMath only
m→n = m in 17/18; n in 18/19
(X) = not running in 17/18

A
B
A is a prerequisite for B

A
B
A is an alternative prerequisite for B

Year Weightings

BSc (Hons) programmes studied in three year full-time mode				
Year	Part	Stage	Weighting in OPA	NFAAR-UG decisions reference See **NFAAR-UG** information at: www.bath.ac.uk/registry/nfa
1	1	1	0.00	Main assessment: Appendix 11 Supplementary assessment: Appendix 12
2	2	2	0.32	Main assessment: Appendix 11 Supplementary assessment: Appendix 12
3	3	3	0.68	Main assessment: Appendix 27 Supplementary assessment: Appendix 28

BSc (Hons) programmes with Placement				
Year	Part	Stage	Weighting in OPA	NFAAR-UG decisions reference See **NFAAR-UG** information at: www.bath.ac.uk/registry/nfa
1	1	1	0.00	Main assessment: Appendix 11 Supplementary assessment: Appendix 12
2	2	2	0.32	Main assessment: Appendix 11 Supplementary assessment: Appendix 12
3	2	3	0.00	Placement year
4	3	4	0.68	Main assessment: Appendix 27 Supplementary assessment: Appendix 28

BSc (Hons) programmes with Study Year Abroad				
Year	Part	Stage	Weighting in OPA	NFAAR-UG decisions reference See **NFAAR-UG** information at: www.bath.ac.uk/registry/nfa
1	1	1	0.00	Main assessment: Appendix 11 Supplementary assessment: Appendix 12
2	2	2	0.24	Main assessment: Appendix 11 Supplementary assessment: Appendix 12
3	2	3	0.08	Study Year Abroad

4	3	4	0.68	Main assessment: Appendix 27 Supplementary assessment: Appendix 28

MMath programme

Year	Part	Stage	Weighting in OPA	NFAAR-UG decisions reference See **NFAAR-UG** information at: www.bath.ac.uk/registry/nfa
1	1	1	0.00	Main assessment: Appendix 15 Supplementary assessment: Appendix 16
2	2	2	0.16	Main assessment: Appendix 23 Supplementary assessment: Appendix 24
3	2	3	0.34	Main assessment: Appendix 23 Supplementary assessment: Appendix 24
4	3	4	0.50	Main assessment: Appendix 27

MMath programme with year long placement

Year	Part	Stage	Weighting in OPA	NFAAR-UG decisions reference See **NFAAR-UG** information at: www.bath.ac.uk/registry/nfa
1	1	1	0.00	Main assessment: Appendix 15 Supplementary assessment: Appendix 16
2	2	2	0.16	Main assessment: Appendix 23: Supplementary assessment: Appendix 24
3	2	3	0.00	Placement Year
4	2	4	0.34	Main assessment: Appendix 23 Supplementary assessment: Appendix 24
5	3	5	0.50	Main assessment: Appendix 27

MMath programme with Study Year Abroad				
Year	Part	Stage	Weighting in OPA	NFAAR-UG decisions reference See **NFAAR-UG** information at: www.bath.ac.uk/registry/nfa
1	1	1	0.00	Main assessment: Appendix 15: Supplementary assessment: Appendix 16:
2	2	2	0.16	Main assessment: Appendix 23: Supplementary assessment: Appendix 24:
3	2	3	0.34	Study Year Abroad
4	3	4	0.50	Main assessment: Appendix 27:

Further information

Section in this Handbook on **Assessment**.
Definitions of assessment terms: www.bath.ac.uk/registry/nfa/nfaar-ug-appendix-02.pdf

Notes:

In all units the pass mark is 40%. For each year of a degree programme the overall stage average (the OSA) is the (credit-weighted) average over the units taken, irrespective of their level or home department. Although you must pass Year 1, your Year 1 average will not be included in calculating your final score, so it will not affect your final degree class. The Overall Programme Average is not rounded. So, for example, an OPA of 49.8% is less than 50% and so indicates a Third Class Honours degree. There are however allowances for borderline situations – see Appendix 27 of the NFA

Placements

The University is committed to supporting placements in order to enhance the vocational relevance of its programmes and the learning experience of its students. Each Faculty and the School has a dedicated placements team to support and guide you through the process of applying for, securing and successfully completing a placement. The contact details for your Placements Manager and Placement Tutor can be found in the front of this Handbook.

You can expect to receive placement preparation support on the application process (i.e. CV writing, production of covering letters and applications, interview skills, assessment centres) as well as practical placement support (such as where to find information on visas, accommodation, money etc).

Before going on placement you will receive a University Placement Handbook containing generic advice and information for whilst you are on placement: www.bath.ac.uk/internal/placements/documents/Placement_Handbook.pdf

You will receive programme specific information directly from your Department. If you are on a placement of one semester or longer in the UK you can normally expect to be visited by staff at least once during your placement. If you are on a placement overseas, staff will either visit, where practical, or arrange an alternative way of keeping in contact.

During the placement you will be expected to complete the Personal Objectives and Learning Outcomes forms (POLO) or equivalent (which helps you to structure your placement objectives and personal development) and the Goals, Objectives and Learning form (GOLF), where applicable (for assessing your performance against these objectives).

Placement aims:

The aims of the placement are for students to undertake a work programme, usually within mathematics, statistics or a related discipline, whilst placed at an approved business or other organisation, and to develop transferable, personal and interpersonal skills relevant to a graduate mathematician or statistician.

Learning Outcomes:

On completion of the placement year, the student should have demonstrated:

- The ability to apply knowledge and skills gained at the university to a work programme in a professional context;
- Good personal skills in planning and time management, problem solving, decision making and team membership;
- Good oral communication and presentation skills, including making an oral presentation at the placement conference on the work being carried out;
- Sound record keeping and report writing skills, including writing monthly self-evaluations and a report on the work carried out during the placement.
- Knowledge of one business/career opportunity in depth and a basic understanding of graduate opportunities using mathematics and statistics
- An understanding of the application process for graduate employment.

Further information

University Placement Handbook / information for placement students:
www.bath.ac.uk/internal/placements/information-for-students.bho

Prizes and awards

The University's MARY TASKER AWARD is awarded annually to a member of the University's academic staff in recognition of excellence in teaching. Students are invited to nominate any of their lecturers for this award.

THE CHANCELLOR'S PRIZE is open to all undergraduate and postgraduate students. Nominees should have demonstrated academic excellence together with a contribution to the life, academic reputations and general work of the University. Students who feel they may be suitable candidates for Chancellors prize are encouraged to discuss this with their Personal Tutor.

BP CENTURION AWARDS may be made to first or second year undergraduates who have achieved the highest stage average in their cohort or to final year undergraduates who have demonstrated academic excellence and a contribution to the life of the university. Nominations may be made by the Department.

Within the Department of Mathematical Sciences the following prizes are currently available for awarding:

Chapman and Hall/CRC Prize for Statistics

The publishers Chapman and Hall/ CRC fund an annual prize for Statistics in recognition of their close association with the Statistics Group of the Department. The prize is awarded, on the basis of performance in Year 2, to that student, if any, who has shown outstanding ability in Statistics.

The award of the prize is determined by a committee comprising the internal examiners in Statistics under the chairmanship of the Head of the Statistics Group.

The Harold Davenport Prize

The late Professor Harold Davenport FRS (1907-1969) was the Rouse Ball Professor of Mathematics in the University of Cambridge. This prize in his memory is endowed by his sons, Richard and James. The latter is currently the University's Professor of Information Technology.

The prize will be awarded on the basis of performance in Year 2 to that student, if any, who has shown excellence in Pure Mathematics. The award of the prize will be determined by a committee comprising the second year Mathematics examiners under the chairmanship of the Head of the Mathematics Group.

F H Jackson Prize in Mathematics

Dr Jackson was Head of the Mathematics Group in the then School of Mathematics until August 1972. On retirement he endowed a trust to provide an annual prize.

The prize is awarded annually to that student (if any) who obtains a First Class Honours Degree, or equivalent, and who achieves the best performances in Pure Mathematics provided that, in the opinion of a committee formed by the Pure Mathematics internal and external examiners for the final examination with the appropriate Professor of Mathematics acting as Chairman, he/she has shown a genuine flair for, and understanding of, Pure Mathematics.

David Powell Prize for Applied Mathematics

David Powell was an undergraduate in the then School of Mathematical Sciences who was killed in a tragic accident while on holiday in France in 1983 after a successful and

enjoyable first year. The prize in his memory is endowed by royalties from a book written by his father the late Professor M J D Powell FRS. The prize is awarded, on the basis of performance in the final year, to that student (if any) who has shown excellence in the application of mathematics in the areas of Applied Mathematics or Numerical Analysis.

The award of the prize is determined by a committee comprising the Chairman of the Year 3/4 examiners together with the professors and external examiners in the appropriate subject areas.

The Institute of Mathematics and its Applications Prize

The Institute of Mathematics and its Applications provides every British University with two prizes consisting of one year's subscription to graduate membership of the Institute.

The prizes are awarded to the best two final year students on IMA-recognised degree courses.

Unit and Programme Changes

We continually look for ways to develop and improve our programmes. For example:

- it might be desirable to make some updates to content to reflect the latest developments in a particular field of study
- a review of assessments across a programme (including feedback received) might identify that changes to a unit assessment would better support student learning.

Students who would be affected by proposed changes are consulted about them, either via their Staff/Student Liaison Committee or directly, depending on the nature of the change.

In addition, it is sometimes necessary to make changes due to unforeseen or unavoidable circumstances. For example:

- the accrediting body for a programme may require changes to be made to it
- it may not be possible to run a particular unit because a member of teaching staff with specialist expertise leaves the University and we are unable to find a suitable replacement
- it may not be viable to run a particular optional unit in a given year because very few students select it.

In such cases, the University will always try to ensure that any impact on students is minimised and that students are informed of the changes at the earliest opportunity.

All programme and unit changes are managed through a formal process set out by the University. The aim of this is to ensure that changes are academically appropriate and properly supported, take place in a timely manner, and safeguard the interests of students.

How Your Programme is Reviewed and Monitored

The University has a number of mechanisms for ensuring that programmes remain up-to-date, issues are dealt with and improvements made.

All programmes and units are monitored annually, looking at what is working well and identifying any actions that need to be taken. Student feedback, including feedback

given through unit evaluation and other student surveys, is a key part of unit and programme monitoring.

Departments also conduct periodic reviews of their programmes. These provide an opportunity for in-depth review and development, involving input from students and from an adviser(s) external to the University.

Study and Support: Getting the Most Out of Your Studies

Accessing university email

You will need to use your unique username and password to access your University email account. You are able to access your email by going to mail.bath.ac.uk

Your username also forms your email address (username@bath.ac.uk).

The University will often communicate with you about a range of important matters including registration, unit enrolment, assessment, degree ceremonies, and matters such as tuition fees, via your University email account. So that you do not miss out on (and as a consequence fail to act on) important information, it is a University requirement (Regulation 1.3) that you access your University email account regularly, even if you are out on placement or study abroad.

You therefore have a responsibility to ensure that your University email account can receive incoming mail and that you read your email regularly.

Further information

Email guidance: www.bath.ac.uk/bucs/email
Regulation 1.3: www.bath.ac.uk/regulations/Regulation1.pdf

SAMIS

SAMIS is the University's student records database. It provides an online portal where you can view details about your registration, update your contact details, and do other things such as viewing exam information, viewing your confirmed assessment results, and (where applicable) choosing optional units.

Further information

www.bath.ac.uk/samis

Moodle

Moodle is the Virtual Learning Environment (VLE) used at the University of Bath. It is used by academic Departments to support learning and teaching at programme and unit level. It provides a platform for the delivery of resources and online activities, and can also support student interaction and collaboration.

See: go.bath.ac.uk/moodle

Personal tutor system

On entry to the University, you will be assigned a Personal Tutor who will help you to get the best out of your university experience. Your Personal Tutor will:

- support you in your academic progress and personal development
- discuss with you programme choices, placement opportunities and future career plans
- provide you with a reference for your placement or career
- guide you to sources of expert help with any personal/welfare issues.

You should expect to meet with your Personal Tutor on at least three occasions in your first semester at the University and at least once per semester thereafter. This enables you both to get to know each other, such that you can raise any issues with your tutor and your tutor can support you fully through your programme. It is important that you attend scheduled meetings with your Personal Tutor and let them know in advance if you cannot attend. Many of these meetings may be in small groups but you can also request a personal, one-to-one meeting at any time.

If you should have reason to wish to change your Personal Tutor please contact your Director of Studies to discuss the matter.

Further information

www.bath.ac.uk/students/support/academic/personal-tutors

Departmental Guidelines for Personal Tutoring

All undergraduate students have a personal tutor who is assigned to them before they arrive in Bath. Normally a student would expect to retain the same personal tutor throughout their undergraduate years at the University

The Student's Responsibilities

1. In their first year each student is required to meet their personal tutor at least every week during the first term (i.e. until the Christmas break), and at least every fortnight thereafter during teaching weeks. It is essential that students inform their personal tutor if they are unable to attend a scheduled meeting.
2. In the remaining years, the minimum requirement is for each student to meet their personal tutor four times per year in person and to have one email correspondence over the summer. These meetings are to be scheduled at key points in the academic year: the start of Semester 1, before Christmas, after Semester 1 results are published, around the time options are chosen for the following year, and (by email) once the semester 2 exam results are published over the summer.
3. Students must respond within 3 days to any communication from their personal tutor, and must attend any meeting the personal tutor requests with them.
4. Students should initially direct queries about their programme of studies and progression to their personal tutor.
5. It is the student's responsibility to establish a relationship with their personal tutor, to approach them for advice, to discuss their progress and to keep them informed of matters which will enable their personal tutor to write academic references for them. If the student feels that it is not possible to establish such a relationship, then they should email the Director of Studies (maths-dos@bath.ac.uk) to discuss possible reallocation.
6. Personal problems discussed with a personal tutor are regarded as confidential, unless otherwise agreed by the student. The University's confidentiality protocols apply. Students who feel unable to approach their personal tutor on sensitive personal matters may contact the Director of Studies directly. An alternative source of counselling support can be accessed through Student Services.

The Personal Tutor's Responsibilities:

1. Writing an email of welcome to new personal tutees before their arrival, and being present during Induction Week to meet their new personal tutees when scheduled in the Freshers Induction Programme.
2. Initiating meetings at mutually convenient times with their personal tutees at the frequency set out above (weekly/fortnightly for first years, five contact points per year – four in person, one in the summer by email - for later year students). To meet with a tutee upon request, within a reasonable timescale.
3. To inform the Director of Studies about any tutee who fails to attend meetings or respond to emails.
4. To inform the Senior Tutor if there are serious and unresolvable problems in the tutor/tutee relationship.
5. Personal problems discussed with a personal student are to be regarded as confidential, unless otherwise agreed by the student. The University's confidentiality protocols apply. Where appropriate, and with the student's consent, concerns about a personal tutee should be reported in general terms to the Director of Studies.
6. To be familiar with the information and resources provided in the Tutoring section of the Maths Staff Zone on Moodle, in particular the links for student support.
7. To be familiar with the information and resources provided in the Undergraduate Programmes Handbook and other items on the Maths Undergraduate Zone on Moodle.
8. To discuss examination results, and provide advice about choice of programmes and units, and other academic matters.
9. To write references for personal tutees, including after Graduation, upon request.

The Directors of Studies' Responsibilities:

1. To oversee allocation of new students to personal tutors. Reallocating students where either the student or the personal tutor request this, or if the personal tutor leaves the University.
2. To explain the personal tutoring scheme to all Freshers during Induction Week, and to provide information and links to resources in the Programme Handbook and on the Maths Undergraduate Moodle Zone.
3. To take appropriate steps where a student is not maintaining contact with their personal tutor, or otherwise giving cause for concern. This could include contacting the Senior Resident Tutor, Head of Student Services and Security.
4. To deal with individual student issues which cannot be handled by the personal tutor alone, in consultation with appropriate Student Services.
5. To ensure that the Maths Undergraduate zone flags the study skills resources provided by the University (www.bath.ac.uk/students/support/academic/index.html).

The Senior Tutor's Responsibilities:

1. To explain the personal tutor system to new academic staff, and to ensure that personal tutors are aware of and fulfil their responsibilities.
2. To remind personal tutors of the key contact points as they approach and to provide relevant advice and resources for each of these.

3. To monitor the operation and effectiveness of the personal tutor system.
4. To maintain the Tutoring section of the Maths Staff zone.
5. To intervene if relations between a student and their personal tutor break down.

Academic skills support and development

To help you get the best out of your studies and your future employability, we offer all our students a comprehensive range of free, year-round skills and personal development opportunities designed to complement your academic programme.

These opportunities have been designed to give you choice and flexibility to help you get the support and development you need at the time you most need it. You can choose from classes, tutorials, drop-in sessions, workshops and online resources to develop your academic skills, for example to:

- create well-written, clearly structured essays, reports and dissertations
- think critically in order to enhance your writing
- manage information sources and literature effectively
- give polished and effective academic presentations
- manage and analyse numbers, data and statistics
- enhance your existing language proficiency, or learn a new language
- use IT tools and resources effectively.

There are many other opportunities also available to you through our Careers Service and Students' Union to help you develop your skills and prepare for the workplace. For example:

- writing an effective job application and CV
- succeeding at interview or assessment centre
- leading and managing projects
- chairing meetings
- running a club or society.

Further information

Find out more about the skills support and development opportunities available here:

go.bath.ac.uk/skills

Recognition for extra-curricular activities: The Bath Award

The Bath Award recognises and accredits the skills and achievements of students engaged in all types of extra-curricular activities. It operates alongside your degree programme and aims to capture the extra-curricular achievements at University that you will find valuable in your future life and career.

Further information

thesubath.com/bathaward

The Library

The Library is open 24 hours a day and provides print and electronic materials and information services to support study and research across the University. It houses over 520 PCs, wireless networking throughout, and provides areas for both quiet individual study and group work. Alongside 340,000 printed books, it offers over 22,000 electronic journals, 425,000 electronic books, 90 databases and digital versions of the University's academic publications, all available across the University and beyond. The Library's copy and print service includes black and white and colour photocopying, laser printing and scanning.

Information specialists, known as Subject Librarians (see the Department's library resources page below), are responsible for services to individual Departments/the School. They provide individual help to students and staff, as well as teaching information skills in Department and School programmes and through general University skills provision. All new students receive library introduction sessions during the induction period.

Further information

This Department's library resources page is: go.bath.ac.uk/librarymaths
For information on all library services and resources: www.bath.ac.uk/library

Computing facilities and IT skills

With your username and password, you will be able to access one of over 1,000 workstations across campus. These enable you to use email, the internet, file storage, Office applications such as Word and Excel, and often give access to the more complex software used on your programme. All computers print to photocopiers in the Library and around the campus, for which there is a charge per page.

With your username and password you can also register your own laptop, smartphone or tablet for connection to the campus wireless network (which covers spaces such as communal areas, the Library and cafés) or to around 150 student docking ports. You can

use your own device to access many University applications using a service called UniDesk. Find out more about this at: go.bath.ac.uk/unidesk

Support is available from the IT Service Desk on Level 2 of the Library or online at: www.bath.ac.uk/computing-services

Tutorials and Frequently Asked Questions (FAQs) are provided in the help section.

If you have a disability or require learning assistance, Computing Services can support you with your computing needs. An Assistive Technologist is available to provide advice and support. Additional resources available include a purpose-built room, specialist software and computer hardware - including laptops for loan.

The IT shop in the Library stocks popular products such as academic software, DVDs, network cables and headsets. You can order many further IT products through the shop. Prices are often lower than in high street shops.

You can also borrow technology from the Service Desk in support of your studies, for example audio recorders, video cameras and projectors.

Further information

Computing Services: www.bath.ac.uk/computing-services
Information for new users: go.bath.ac.uk/newusers
Information for users with a disability or requiring learning assistance: go.bath.ac.uk/assistive-technologies
IT shop: go.bath.ac.uk/ITshop
Computing Services Twitter feed: @UniofBathIT

Recording of Lectures

'Lecture capture' technology is widely used on campus to record lectures. Lecturers on your units will inform you if lectures will be recorded and the recordings made available for you to view again online. Where provided, lecture recordings are made available as an additional resource for personal study and revision purposes, and you can pause and rewind recordings when you re-watch them. The University cannot guarantee recordings (for example in the event of a technical fault) and recordings are not made available indefinitely.

As set out in Ordinance 22.4, students are not permitted to copy or redistribute lecture recordings, or to make their own recordings of lectures. However, the University may permit students with a disability to record lectures where this is a reasonable adjustment under the provisions of the Equality Act, in order to give these students equal access to educational opportunities. In such circumstances the lecturer will be informed that the lecture is being recorded and the student may use the recording for their own personal study purposes only. Students with a disability should contact the Disability Service for further advice.

Further information

Ordinance 22: www.bath.ac.uk/ordinances/22.pdf
Disability Service: www.bath.ac.uk/groups/disability-service

Student Representation

Feeding back your views to the University

The University is committed to reviewing and continually improving its practice. The main ways in which we seek feedback are through:

a) Staff / Student Liaison Committees (SSLCs)
b) surveys
c) the Students' Union.

We also use focus groups, Departmental working parties, and various kinds of feedback session.

You can get actively involved in determining how your educational and student experiences are organised by becoming active in the Students' Union or by letting your Department know that you are interested in contributing.

Every Department has a formal system so that all students can comment routinely, in confidence and anonymously on the learning experience they have received. Such comments help us to check that:

- you have a clear idea of the aims and requirements of each unit you study
- our teaching is effective and stimulating
- the advice and feedback we provide on your work is helpful
- our resources are suitable

You will be asked to complete a short online unit evaluation for units you have studied. You will also be asked to complete surveys periodically on your experience of the programme as a whole. Please complete each evaluation fully, thoughtfully, and candidly. In particular, please tell us not only your opinion but also the *reasons* behind your opinion.

When we receive responses to evaluations, we analyse them – especially the positive suggestions for change and concerns that are voiced. Student feedback and the resulting actions are taken into consideration in annual monitoring of units and programmes. Survey results are discussed at committees where student representatives have the opportunity to input to any action plans developed in response to the issues raised.

Your feedback is important to both the University and the Students' Union. Please keep telling us what is going well and what needs to get better. We will communicate how feedback on units and programmes, and the wider student experience, has been acted upon.

Student representatives

As a student of the University you are automatically a member of the Students' Union (although you have a right to opt out - see section below on **Students' Union membership**). Officers of the Students' Union represent students' interests on University decision-making bodies. In addition, numerous elected student representatives play important roles on various Departmental, Faculty/School and University committees. All student representatives are elected through online elections facilitated by the Students' Union.

There are many opportunities for elected student representatives. If you are elected to serve on Departmental, Faculty/School or University committees you will be expected to represent the views of your fellow students and provide feedback following meetings.

Student Representation on Committees

Departmental level:	Each Department has at least one Departmental Staff / Student Liaison Committee (SSLC). These comprise several elected student members, known as Academic Reps, and an equal or smaller number of staff members. Academic Reps are elected at the beginning of every year through online elections. Their role involves collecting the views of the students on their programme and attending SSLCs where they represent these views to their Department. Each SSLC produces an Annual Overview Report briefly outlining their work and highlighting good practice, the key themes explored and the actions that have been taken as a result. The Students' Union reviews all these reports and prepares a summary report for the University highlighting issues which need to be addressed by the institution as a whole. There is also provision for student membership of the Department Learning, Teaching and Quality Committee: normally one undergraduate and one postgraduate (taught) representative. Academic Reps attend Students' Union Academic Council meetings. These take place every three weeks during semester time in order to: • keep Students' Union Officers and fellow Academic Reps informed of academic developments throughout the University • discuss common problems and interests affecting Departments • gather student opinions and views to be used by the University and the Students' Union • update Academic Reps on key issues. Do feel free to approach your student Academic Reps at any time to inform them of good practice or areas for enhancement in your units and programme. This is normally the person who represents your year or degree scheme on the Departmental SSLC.
Faculty/ **School level:**	Student representatives are also elected as Faculty Reps to sit on a number of Faculty/School level committees such as the Faculty/School Board of Studies and the Faculty/School Learning, Teaching and Quality Committee. Faculty Reps are also members of the Students' Union Academic Exec Committee.

University level:	University committees with student representation include the Council/Senate/Students' Union, the University Learning, Teaching and Quality Committee, the Programmes and Partnerships Approval Committee, and Senate.

If you are interested in opportunities to represent student views, please contact the Students' Union: academicreps@bath.ac.uk

The Students' Union runs a full training programme for student representatives including an online course in Moodle, a conference and additional sessions through the Skills Training programme.

If you need to raise a concern, remember there are various routes open to you. You can discuss issues directly with a lecturer, your Personal Tutor, or the Director of Studies. Individual problems are often more readily resolved in this way. The Students' Union Advice and Support Service, described below, also provides students with information and confidential advice.

Further information

Your SSLC: moodle.bath.ac.uk/course/view.php?id=30537
Students' Union Academic Representation including contact details for Academic Reps: thesubath.com/academic
Election of Academic Reps: thesubath.com/elections
Students' Union Skills Training programme: thesubath.com/skills-training
Outline election procedures are included in QA48 Student Engagement with Quality Assurance and Enhancement, Annex A: Staff/Student Liaison Committees: www.bath.ac.uk/quality/documents/QA48_Annex_A.pdf

Students' Union Membership

All students registered with the University are automatically given membership of the Students' Union; however you have the right not to be a member. For further information on opting out of this membership, please go to the Code of Practice for the Students' Union:
www.bath.ac.uk/university-secretary/guidance-policies/codeofpracticebusu.html

Student Support

Most students find there are occasions when it can help to talk to someone about a personal problem or issue. In many cases your Personal Tutor, Director of Studies, or Wellbeing Adviser (see the **Residential Life and Wellbeing Service** section below) will be able to help. However, sometimes more specialist help is needed. The University has a range of professional support services that you can approach directly. Your two main contact points are Student Services at the Roper Centre in 4 West and the Advice and Support Service in the Students' Union.

Student Services

Student Services can provide advice and support on a range of issues including:

- counselling and mental health
- disability issues

- money and funding
- residential life and wellbeing.

You can make an individual appointment or just pop in to our daily drop-in sessions.

Student Services can also provide letters confirming student status for a variety of purposes, which can be requested by logging on to SAMIS: www.bath.ac.uk/services/register-as-a-student-of-the-university-and-update-your-details

The Roper Student Services Centre in 4 West is open from 9.30am to 4.30pm throughout the year (tel: 01225 385538). Services are also available from the Virgil Building in Bath city centre.

For the full range of Student Services, see: go.bath.ac.uk/student-services or email: studentservices@bath.ac.uk

The Students' Union Advice and Support Service

The Students' Union Advice and Support Service provides information for students on a range of topics affecting their education and welfare, including advice for students wanting to submit Individual Mitigating Circumstances claims (see the section in this Handbook on **Assessment**), to change their programme, or experiencing problems with their programme. The staff in the Advice and Support Service also offer support, information and representation at academic appeals, academic misconduct and disciplinary hearings, and information and advice on a wide range of issues which affect students including housing and welfare issues.

The Students' Union Advice and Support Service is open Monday to Friday 9.00am to 5.00pm in term time (from 10.00am on Fridays) and 10.00am to 4.00pm during vacations (tel: 01225 386906, email: suadvice@bath.ac.uk)

The Advice and Support Service also supports the Diversity and Support groups – details of which can be found at: thesubath.com/diversity-support

The Students' Union webpage provides the facility for students to report incidents of harassment, discrimination or bullying. Incidents can be reported anonymously if preferred. Details of how to report an incident are available at: thesubath.com/report-an-incident

For the full range of services see: thesubath.com/support

Further information and contacts

A guide to the wide variety of support and information available to students can be found at: www.bath.ac.uk/students and the Students' Union website: thesubath.com

Residential Life and Wellbeing Service

The University's professionally qualified Wellbeing Advisers provide a welfare and wellbeing service to all our students. You can talk to a Wellbeing Adviser about anything and we are also available evenings and weekends.

We hold daily drop-in sessions on campus, including weekends and University vacations. Drop-in sessions are also held at the Virgil Building in Bath city centre and we run activities during vacations for students who remain in Bath.

Further information

www.bath.ac.uk/groups/residential-life-and-wellbeing-service

Advice for International Students

The Student Immigration Service provides a tailored pre-arrival and induction programme and advice and support for all international students, including a 'check and send' service if you need to send a Tier 4 visa application to the Home Office. The Service offers workshops, a drop-in service, advice via email, phone and web-based platforms, or individual appointments can be made through the Helpdesk in The Roper Student Services Centre, 4 West.

Further information

www.bath.ac.uk/visa

University-wide induction and welcome events are organised for incoming exchange students in the first week of each semester.

Further information

www.bath.ac.uk/campaigns/studying-at-bath-as-an-erasmus-exchange-or-visiting-student

For students who join outside of the standard semester dates, induction and welcome events are organised by the relevant Department.

Dealing with a problem involving the University

We want to ensure that, if you have a problem concerning the University, it is resolved as quickly as possible. As described above, there are student representatives on all formal decision-making committees – at Departmental, Faculty/School and University level. Student representatives help to anticipate potential problems and, when problems occur, to raise them so that they can be dealt with promptly. As a result we can often resolve problems *before* they get to the stage where a formal complaint might be necessary.

The Students' Union offers advice for students on a range of issues through its Advice and Support Service. Its advice is independent of the University. See the section above on **Student Support.**

Complaints

If you do need to make a complaint, there are procedures in place to deal with it, outlined in the University's Student Complaints Procedure (see below).

These procedures are designed to ensure that your complaint will be dealt with in good faith and that you will not be penalised for complaining. When we receive a complaint, we will first seek to deal with it through informal discussion. If this fails to resolve the issue at hand, you can raise the complaint formally.

In addition, there are procedures for requesting a review of progression or award classification decisions, or of the level of attainment. For information on these procedures, please see the section in this Handbook on **Procedures for Academic Appeals**.

Further information

Student Complaints Procedure: www.bath.ac.uk/regulations/Appendix1.pdf

Bullying, harassment and victimisation

We believe that all our students and employees are entitled to be treated with dignity and respect and to be free from unlawful discrimination, victimisation, bullying, or any form of harassment. This is set out in the University's policy, Dignity and Respect for Students and Staff of the University of Bath: Policy and Procedure for Dealing with Complaints (below).

This policy and procedure applies to all staff, students and third parties (e.g. contractors to the University).

Further information

Dignity and Respect Policy:
www.bath.ac.uk/equalities/policiesandpractices/dignityandrespectpolicy.pdf
On reporting incidents of bullying or harassment, see also the section in this handbook on **Student Support**.

Mediation

If you are involved in a disagreement or dispute, you can seek help from the University's Mediation Service. This service is impartial, non-judgemental, and confidential. Requests for mediation support should in the first instance be made either to the Mediation Service Manager, or the Students' Union Advice and Community Manager.

Further information and contacts

Mediation Service: www.bath.ac.uk/equalities/activities/mediation
Mediation Service Manager: Marlene Bertrand 01225 383098 or equalsdiv@bath.ac.uk
Students' Union Advice and Community Manager: 01225 385863 or suadvice@bath.ac.uk

Advice for students with disabilities, long-term illness, and specific learning difficulties

If you have a disability and/or specific learning difficulty (such as dyslexia), we strongly advise you to speak to the Disability Service team, your Personal Tutor or Director of Studies as soon as possible and preferably before your programme begins. Referral to the Disability Service will enable us to assess your needs and make arrangements to support you.

Any personal information you give when disclosing your disability will be treated in confidence and made available *only* to relevant members of staff and only *with your permission*. If you don't disclose your disability it may be difficult for the University to provide suitable support to help you during your studies. Disclosure will not disadvantage you in any way.

The Disability Service provides advice, guidance, information and support for a range of needs including:

- Autism Spectrum Disorders/Asperger's Syndrome
- dyslexia and other specific learning difficulties
- mental health
- mobility impairments
- sensory impairments

- health conditions such as epilepsy, HIV, diabetes or chronic fatigue.

A screening process is available if you think you may have a specific learning difficulty/dyslexia.

Disability Advisers are also responsible for making applications for alternative arrangements for exams and assessments. Therefore, if you think that, because of a disability, you need alternative exam arrangements (such as extra time or the use of a computer) please discuss this with a Disability Adviser without delay.

Further information

www.bath.ac.uk/groups/disability-service

Pregnancy and Maternity

The University is committed to being as flexible as possible in supporting students who become pregnant, decide to terminate a pregnancy or have a very young child. You are not under any obligation to inform the University of these circumstances, but doing so will enable us to put in place arrangements that will assist you in undertaking your programme of study.

You can seek advice, guidance and support via your Director of Studies, Personal Tutor and the University's Student Services.

Further information

www.bath.ac.uk/guides/getting-advice-if-you-are-pregnant-while-studying-or-have-a-young-child

Care Leavers and Estranged Students

The University is committed to supporting students from a wide range of backgrounds and circumstances including those who are care leavers, from a Foyer or are estranged from their family. We are aware of the challenges students may face when starting university and we want you to get the best out of your programme and university experience. We are able to offer you advice and guidance about settling in, academic studies, funding, accommodation, wellbeing and careers. The service we provide is confidential and entirely optional in relation to the level of support you feel that you may need.

Further information

www.bath.ac.uk/guides/financial-support-if-you-are-leaving-care
www.bath.ac.uk/students/finance/funding-advice/additional-financial-responsibilities

Careers Service

The University Careers Service can support you through the career planning process, whatever your career aspirations. In addition to providing support with developing your employability, and guidance on how to make informed career decisions, Careers Advisers will provide help with writing your CV, practising aptitude tests, and improving your interview skills. Being in regular contact with several hundred major employers, the Careers Service is also a fantastic source for graduate job vacancies for Bath students, as well as the organiser of several major careers fairs each year.

Further information

The Careers Service is open throughout the year, including the vacations.
Check the web site for opening times: www.bath.ac.uk/students/careers
The web site includes the *Myfuture* vacancies portal.

Contact careers@bath.ac.uk or 01225 386009 or follow the Careers Service on Twitter @CareersatBath or Facebook (search for BathUniCareers).

Assessment

Feedback to Students on Assessment

During your programme, you will receive feedback on assessed work. Feedback on assessments may take different forms, depending on your subject and the type of assessment. You will be informed of the timing and nature of the feedback you will receive on each assessment, including whether the piece of work itself will be returned to you. For formal written examinations, students may receive general feedback to the group rather than individual feedback. You can discuss feedback you receive on assessments alongside your performance and progress in your studies at meetings with your Personal Tutor.

Department policy on feedback on assessed work

Pedagogical Rationale

Fundamental ideas in Mathematics can be difficult to comprehend and digest for future application. We believe that mastery of these ideas can only be achieved reliably with study over an extended period by working on problems that exercise these ideas. Our policies are designed to provide students the opportunity to grapple with these ideas and give feedback that channels and reinforces this effort. We aim to help students learn the practice of Mathematics and this requires the active participation of both student and teacher. We believe that formative assessment is the best way to provide feedback. Summative assessment in the form of exams is primarily for judging student achievement and not for providing feedback.

Examinations

Many units in Mathematics are assessed solely by examination. Five years (where available) of past examination papers with worked solutions will be made available via the Library website.

The feedback guaranteed for each exam is a final mark along with general comments, posted on Moodle, from the examiner on the performance of the whole class.

Individual exam feedback may also be available from lecturers or personal tutors, particularly in cases where marks are unexpectedly poor.

Staff Responsibilities

- Personal tutors will advise students on examination skills including assessment criteria.
- Lecturers will make clear, at the start of the unit, the format and style of any examination to be used.

Student Responsibilities

- Students will develop their examination skills by participation in tutorials and making use of published resources.

Coursework

Some units are partially assessed by coursework. A few units are entirely assessed by coursework.

Staff Responsibilities

- A detailed specification of the assignment and of the examiner's intentions, including an explicit estimate of the time that average students are expected to devote to it.
- An estimate of the total number of marks allocated and, if the assignment is in several parts, the relative weights of these parts.
- The conditions under which an assignment is to be attempted, e.g. in scheduled sessions or own time, and whether or not the examiner, tutors other lecturers or students may be consulted.
- The date on which the assignment is set (i.e. available to students) and the time and date by which it must be submitted.
- Coursework will normally be marked in adequate time for students to reflect on the feedback received. Students should either have the opportunity to examine marked coursework or to receive feedback on their performance. For coursework due near the end of the semester, it may not be possible to provide individual feedback before the examination.

Student responsibilities

- Students will submit work to the department office before the specified deadline.
- Students will read and digest the feedback given.

Formative Assessment

Every unit where the sole form of assessment is a final examination (i.e. most units in Mathematical Sciences) will have regular formative assessments in a form appropriate to the material.

Staff Responsibilities

- Staff will provide problem sheets, exercises and other tutorial material suitable to the unit on a regular basis.
- Staff will provide solutions to items of formative assessment. The solutions may be provided on paper, online or demonstrated within tutorials
- Formative assessments will be marked by the lecturer or by a tutor and returned in a timely manner sufficient for the student to benefit from the feedback received. Typically this will occur about one week after submission but no longer than three semester weeks after submission.

Student Responsibilities

- Students will attempt problem sheets provided and hand them in before the stated deadline
- Students will attend and participate in tutorials
- Students will collect marked and reflect upon the feedback provided

Placements

Students are required to provide a written report and make a presentation on their return from placement.

Staff Responsibilities

- The personal tutor, the industrial training tutor and the placements officer will read the placement report. Some feedback will be provided.
- Staff supervising the placement conference will provide feedback to students on presentations

Student Responsibilities

- The student will write and submit before the deadline a report on the placement.
- The student will prepare and deliver a presentation on their placement activities.

Academic Integrity: Training and Test

As a student registered on a University of Bath award, you are required to undertake the academic integrity training and pass the associated test.

The academic integrity training aims to provide all students with a basic knowledge and understanding of good academic practice. This includes an understanding of plagiarism and other assessment offences, and skills necessary to reference your work appropriately.

The training and test are accessed from Moodle by clicking on the link entitled **'Academic Integrity Initiative'**: go.bath.ac.uk/moodle

If you have any access problems, then please contact maths-adm-ug@bath.ac.uk in the first instance.

When you have completed the training tutorial and are confident that you have understood it, you should undertake the test.

To pass the test you will need to achieve a mark of 85%. You can take the test as many times as necessary until you pass.

If you do not pass the test, you will need to re-visit the training and/or look at the other guidance available to you (see: www.bath.ac.uk/asc/study-skills/academic-integrity.html) or as required by your Director of Studies, and then take the test again.

You will not be able to progress beyond the next progression point in your studies, irrespective of your programme marks, until you pass this test. Ultimately this means that, if you have not passed the test, you will not be able to receive your award. Your Director of Studies will be able to confirm when the next progression point occurs for your stage of your programme.

Further information

Academic integrity: www.bath.ac.uk/asc/study-skills/academic-integrity.html
Regulation 3.7: www.bath.ac.uk/regulations/Regulation3.pdf

Plagiarism detection and personal data

When you hand in a piece of assessed coursework, you will be expected to make a declaration that the work is your own and, where you have re-used your own work and/or used other sources of information, that you have referenced the material appropriately.

The University uses the Plagiarism Detection Service, Turnitin. This service checks electronic, text-based submissions against a large database of material from other sources and, for each submission, produces an 'originality report'. It makes no judgement on the intention behind the inclusion of unoriginal work; it simply highlights its presence and links to the original source.

The service complies with European Data Protection legislation. When you registered with the University, you gave it permission to process your personal data for a variety of legitimate purposes. This includes allowing the University to disclose such data to third parties for purposes relating to your studies. The University, at its sole discretion, may submit the work of any student to the Plagiarism Detection Service (in accordance with Regulation 15.3e – see below) and may make, or authorise third parties to make, copies of any such work for the purposes of:

i) assessment of the work
ii) comparison with databases of earlier work or previously available works to confirm the work is original
iii) addition to databases of works used to ensure that future works submitted at this institution and others do not contain content from the work submitted.

The University will not make any more copies of your work than are necessary, and will only retain these for so long as remains necessary, for these purposes.

Please note that, if at any time the University submits any of your work to the Plagiarism Detection Service, the service will be provided with, and will retain, certain personal data relating to you – for example, your name, email address, programme details and the work submitted. Such data may be transferred by the Plagiarism Detection Service to countries worldwide (some of which may not be governed by EU data legislation) in order for the work to be checked and an originality report generated in accordance with the proper workings of the Plagiarism Detection Service. Personal data is retained indefinitely by the Plagiarism Detection Service upon submission of work. You may ask for your personal data to be removed by contacting the University's Data Protection Officer.

Further information

The University's procedures on Examination and Assessment Offences (QA53) are described at: www.bath.ac.uk/quality/documents/QA53.pdf
Regulation 15, Assessment of undergraduate and taught postgraduate programmes: www.bath.ac.uk/regulations/Regulation15.pdf
University's Data Protection Officer: dataprotection-queries@lists.bath.ac.uk

Academic Integrity: Referencing and Plagiarism

Plagiarism is the use of any published or unpublished work without proper acknowledgement in your references. Plagiarism occurs when a student 'borrows' or

copies information, data, or results from an unacknowledged source, without quotation marks or any indication that the presenter is not the original author or researcher.

Another form of plagiarism (and hence cheating) is auto-plagiarism or self-plagiarism. This occurs when a student submits work (whether a whole piece or part of a piece) without acknowledging that they have used this material for a previous assessment.

If you use someone else's work – say, by summarising it or quoting from it – you must reference the original author. This applies to all types of material: not only text, but also diagrams, maps, tables, charts, and so on. Be sure to use quotation marks when quoting from any source (whether original or secondary). Fully reference not only quotations, but also paraphrases and summaries. Such references should then be included in a bibliography or reference list at the end of the piece of work. Note that the need for referencing also applies to web-based material; appropriate references according to the type of work or image should always be given.

There are several acceptable methods of referencing material. Examples include the Harvard system and the Numeric system. **Ask your Director of Studies or Personal Tutor for further information and advice on the referencing system used on your programme.**

Guidance on referencing and plagiarism is available through skills training run by the University and the Students' Union, as well as online resources. Referencing guides are also available in print in the Library, and your Subject Librarian will be able to help with any questions.

Further information

For further information on all our skills and development opportunities see:
go.bath.ac.uk/skills
Academic integrity: www.bath.ac.uk/asc/study-skills/academic-integrity.html
Library resources: http://www.bath.ac.uk/library/infoskills/referencing-plagiarism
Students' Union Skills Training: thesubath.com/skills-training

Academic Integrity: Penalties

Any student who is found to have used unfair means in an examination or assessment procedure will be penalised. 'Unfair means' here include:

- cheating - for example, unauthorised use of notes or course material in an examination
- fabrication - for example, reporting on experiments that were never performed
- falsification - for example, misrepresentation of the results of experimentation
- plagiarism, including self-plagiarism (see above)
- unfair collaboration or collusion - representation of work produced in collaboration with another person or persons as the work of a single candidate.

The University's Quality Assurance Code of Practice, QA53 Examination and Assessment Offences, sets out the consequences of committing an offence and the penalties that might be applied.

Penalties for unfair practice will be determined by the Department or by the Faculty/School Board of Studies in line with the procedures set out in QA53. They may include failure of the assessment unit or part of a degree, with no provision for reassessment or retrieval of that failure. Proven cases of plagiarism or cheating can also lead to an Inquiry Hearing or disciplinary proceedings. Claims of inadvertence or ignorance will not be accepted as a basis for mitigation of a penalty.

If you are accused of an offence, the Students' Union's welfare services are available to support you.

Further information

Examination and assessment offences: www.bath.ac.uk/quality/documents/QA53.pdf
Students' Union advice and support: thesubath.com/support

Word counts

Written coursework tasks will normally have a word range or limit. This is in order to give an indication of the depth and detail of work required, and to ensure that students' submitted work is comparable. You will be required to declare the word count for your work when submitting it for assessment.

If you do not observe the given word range or limit for the coursework task, for example if you exceed the word limit, then a penalty will be applied. The penalty that would apply should be stated in writing when the assignment task is distributed. You should take note of what is included when calculating the total word count (e.g. whether or not contents pages, appendices, footnotes, bibliographies and other elements that are not part of the main text are included).

You should check with your Director of Studies if you have questions about word counts and penalties.

Late Submission of Coursework

You will be expected to hand in all assessed coursework and dissertations/projects by a specified date and time. This is to ensure fairness to all students who are submitting work.

If there are valid circumstances preventing you from meeting a deadline, your Director of Studies may grant you an extension to the specified submission date. Forms to request an extension are available on the Maths Undergraduate Moodle Zone. You will need to describe the circumstances which you feel support your request. Your Director of Studies may ask you to produce supporting evidence.

Please note that:

- if you submit a piece of work after the submission date, and no extension has been granted, the maximum mark possible will be the pass mark
- if you submit work more than five working days after the submission date, you will normally receive a mark of 0 (zero), unless you have been granted an extension.

It is not usually possible to mark coursework anonymously if it is submitted after the deadline.

It is important that you speak to your Director of Studies as soon as possible if you become concerned about your submission deadlines.

See also the section in this Handbook on **Submission deadlines**.

Individual Mitigating Circumstances

Individual Mitigating Circumstances (IMCs) are the conditions which temporarily prevent you from undertaking assessment or significantly impair your performance in assessment. As such, the measure of their severity is not about impact on you, but the impact on your affected assessment.

Full information and guidance on Individual Mitigating Circumstances and Assessment (including definitions of IMCs, in the document "What are Individual Mitigating Circumstances?") is available at: www.bath.ac.uk/registry/imc/imc-students.html

It is strongly advised that you become familiar with the available guidance so that you understand the process and timescales should such circumstances arise.

You should make yourself familiar with these definitions, in addition to any IMC guidance offered by your Department, and support and guidance offered through the Disability Service (www.bath.ac.uk/groups/disability-service) or the Students' Union Advice and Support Service (thesubath.com/support).

Your Department/School will be able to advise you on how to submit an IMC claim, and your Director of Studies can help you to understand the potential implications of your IMC claim on your overall progress and/or award, in light of your academic achievement to date and the assessment regulations for your programme.

Should you wish any IMCs to be taken into account by the Board of Examiners for Programmes when considering your progression or award classification, notify your Director of Studies no more than three days after the affected assessment by completing the IMC report form available at: www.bath.ac.uk/registry/imc/imc-students.html

You will also need to submit evidence of how your circumstances affected the relevant assessment(s), for example, a medical certificate in the case of illness or injury.

If you know of a potential IMC that may affect your assessment before you begin an assessment period, it is important that you notify your Director of Studies in advance. After speaking to your Director of Studies, if you do intend to submit a formal IMC claim for the affected assessment(s), you will still need to complete the form and follow procedures.

Assessment Processes

Assessment and marking processes at the University are designed to ensure that assessment of your work is fair and consistent, and that academic standards are appropriate and comparable between the University and other higher education institutions. This is achieved in a number of ways.

Marking: Assessments you will complete during your programme are marked according to:

- *marking criteria (or assessment criteria)* - these are the knowledge, understanding and skills which it has been identified that students should

demonstrate in the assessment and which are taken into account during marking. They are based on the learning outcomes being assessed

- *marking schemes* - these are detailed descriptions of how specific numbers of marks should be assigned against individual components of an answer within the assessment task
- *grade descriptors* - these are descriptions of the levels of achievement required in order to get a result within a given band of marks (e.g. 70% or more).

Anonymous marking: The University has adopted a principle of anonymous marking in order to protect students and staff from bias, and the perception of bias, in the marking process. It applies to all examinations and, where practical, other assessment. It is not possible to mark all coursework anonymously as in some types of assessment the student can be easily identified by the marker (e.g. presentations, group work, laboratory work) or it might not be practical, or in the student interest, to do so. You will be informed when your coursework is to be marked anonymously.

Moderation: Both the setting and the marking of assessments are independently checked through a process known as moderation to ensure that questions test the learning outcomes and are set at the right standard, and that marking is consistent and fair. Moderation is conducted by internal examiners and also by your External Examiner (see below).

Boards of Examiners:

Assessment decision-making at the University is the responsibility of Boards of Examiners established at three levels: assessment outcomes go first to *Boards of Examiners for Units*, then *Boards of Examiners for Programmes*, then finally to *Boards of Studies*. Boards of Studies confirm decisions relating to student progression from one stage of the programme to the next and the final award. The assessment marks you are given initially by markers are therefore provisional up until the point when they have been confirmed by the Board of Studies for your programme. An official release date is set when your confirmed results will be made available to you via SAMIS (the University's student records system). An appeal can only be made in relation to a confirmed mark (see the section in this Handbook on **Procedures for Academic Appeals**).

All marks for a unit are reviewed at a meeting of a Board of Examiners for Units which will verify that the assessment process has been conducted appropriately and that the marks are an accurate reflection of the standards achieved. On rare occasions a Board of Examiners may decide to recommend a change to the marks assigned initially, based on evidence that there was a problem with the assessment (for instance, disruption during an examination, or an exam paper that was too easy or difficult) which means that the marks assigned initially do not accurately reflect the standards achieved by the candidates. This adjustment is known as scaling and under these circumstances the marks of all affected students will be changed.

External Examiners

An External Examiner is someone from another University or a professional organisation who is suitably qualified and experienced in the relevant field of study. At least one External Examiner is appointed for each taught programme or group of programmes.

The role of External Examiner is an important one in assuring that assessment processes are fair and academic standards are appropriate, and supporting the development of your programme. External Examiners look at draft examination papers and samples of assessed work, and attend Boards of Examiners.

Once a year, External Examiners provide a written report on each taught programme. University staff will look at these reports and a response will be made to the External Examiner's comments. Staff/Student Liaison Committees (SSLCs) also discuss External Examiner reports as part of annual monitoring activity. You can read the latest External Examiner report for your programme, and the University's response to it, at: www.bath.ac.uk/quality/externalinput/external-examiners-reports.bho

The External Examiners for your programme are:

Pure Mathematics – Professor Gordon Blower, Lancaster University
Applied Mathematics – Professor Manolis Georgoulis, University of Leicester
Statistics –Professor Mario Cortina-Borja, University College London

It is not appropriate for students to make direct contact with External Examiners. If you are dissatisfied with the process or outcome of an assessment, and are considering whether to raise this either informally or formally, the sections of this Handbook on **Procedures for Academic Appeals** and **Dealing with a problem involving the University: Complaints** give some more information about the University's procedures for student complaints and academic appeals. The section on **Student representation** sets out how students can engage with the quality management process through which the University considers and responds to External Examiners' comments and suggestions..

Assessment Regulations

The University's **New Framework for Assessment: Assessment Regulations: Phase 1 for first-degree programmes ('NFAAR-UG')** specifies the rules governing students' progression from one stage of their programme to the next as well as for the award of degrees. The rules cover all areas of assessment, including supplementary assessment and the extent to which failure may be condoned. If you began the first stage of your programme in or after the 2008/09 academic year, NFAAR-UG applies to you. (If you began before then, please ask your Director of Studies for guidance on assessment).

Your programme is covered by the NFAAR-UG, so your work will be assessed according to its rules.

If at any time you are in doubt about how NFAAR-UG provisions apply to your work, please consult your Director of Studies.

This section highlights areas of the University's assessment framework for the type of programme you are undertaking. It explains the regulations that govern your assessment and outlines how the University makes decisions concerning your progression through your programme and award. Complete information is available in the NFAAR-UG document.

Important information:

This section may contain terms unfamiliar to you. In addition to the explanations we give below you can find full definitions at:
www.bath.ac.uk/registry/nfa/nfaar-ug-appendix-02.pdf
For full details of the NFAAR-UG, visit: www.bath.ac.uk/registry/nfa
You can find a student introduction to the NFAAR-UG at:
www.bath.ac.uk/registry/nfa/nfaar-ug-intro-faq.pdf
For information relating to your programme in the current academic year, visit:
www.bath.ac.uk/catalogues

Your programme and how you are assessed

Within your programme of study, there are *compulsory units*, (i.e. those units in a programme which must be taken by every student registered on the programme), and *optional units* (i.e. those units you may choose from a range of options).

The **Programme Description: Structure of the programme** section in this Handbook shows the structure of your programme. In the table, compulsory and optional units are labelled 'C' and 'O' respectively.

Please note that you can also access this information via links in your programme's description in the Programme and Unit Catalogues available at: www.bath.ac.uk/catalogues

At the end of the table, there are links to the relevant appendices of the NFAAR-UG which state exactly how the assessment rules operate for each stage of your programme.

Some programmes have *Designated Essential Units* (*DEU*s) that must be passed in order to progress to the next stage of the programme and to achieve the normal award for the programme at the end. Your programme does **not** have any of these units.

Programmes are divided into a number of *parts* and *stages*. For full-time students, stages usually correspond to the year of study (so, for example, most first-year students will be in Stage 1 of their programmes).

Within each stage of a programme, the contribution of each unit's assessment to the calculation of the *Overall Stage Average* (*OSA*) is normally directly proportional to the credit-values of the unit concerned. Placement units form part of a stage and have a credit weighting. Some placement units carry marks and some are just pass/fail. Only enhanced placement units contribute to the *Overall Programme Average (OPA)* however.

The normal pass mark for a unit is 40%. In some units, you might need to achieve a threshold mark in one or more component assessments in order to pass the unit overall.

The rules differ slightly between 'Coexistent Master Programmes' (which lead to a Master's degree but have an associated programme leading to a Bachelor's degree) and other programmes.

If you fail a stage, you will be required either to repeat the entire stage or to transfer to a *Designated Alternative Programme (DAP)*, if one exists, or if you fail very badly, to withdraw from the University. Where stage repeats are possible within the set limits, the repeating of any stage will be permitted once only.

At the end of each stage a Board of Examiners will decide whether you have passed the stage. The outcome will depend on both (1) your average mark in the stage and (2) the marks you obtain for each unit. Generally, if you pass each of your units (and, in a

Coexistent Master programme, reach any OSA requirement set in addition), you will progress (or, after the final stage, be recommended for an award).

If you fail a large number of units (or, in a Coexistent Master programme do not reach any OSA requirement set in addition), you might fail the stage outright without any opportunity for supplementary assessment. (Further information on supplementary assessment is provided below).

Particular rules apply to failure of units. They are as follows:

- if you fail any units badly (i.e. achieve less than 35%), you will have to undertake supplementary assessment – unless you have failed so many units that you fail the stage outright
- if you only fail units marginally (i.e. achieve 35%-39%), you might be able to progress without supplementary assessment. Whether you do progress will depend on the total credit value of the failed units and also on your OSA.

Your degree result is based on the calculation of your *Overall Programme Average (OPA)* based on the stages in Parts 2 and 3 of your programme. The contribution of each stage of the programme is set out in the table of assessment weightings and decision references in the **Programme Description: Structure of the programme** section in this Handbook. Follow the links provided in the table to see a clear description of the assessment rules for each stage of your programme. Stages in Part 1 are not included in the OPA calculation.

Recovery to MMath

If you are required under NFAAR rules to transfer from the MMath to the BSc degree, you may have the opportunity to recover to the MMath, at a later date.

Supplementary assessment

'Supplementary assessment' is the term normally used for an opportunity given to a student to retrieve failure before starting the next stage of a programme. It generally involves re-doing coursework or re-sitting an examination. Students undertaking supplementary assessments are likely to have to return to the University in the summer to re-sit examinations.

For the 2017–18 academic year, this period will be 15 August to 24 August 2018.

Each unit's method of supplementary assessment is shown in the online Unit Catalogue.

If you pass all your supplementary assessments, you will be able to progress onto the next stage of your programme.

The outcomes of failing a supplementary assessment are as follows:

1) if you fail supplementary assessment in a unit badly, you will fail the stage
2) if you fail supplementary assessment in a unit marginally, you might be able to progress; whether you may do so will depend on how many units you have failed (and in some cases also on your Overall Stage Average).

Exit awards – CertHE and DiplHE

If you leave your programme early you may be eligible for a generic exit award, either a Certificate of Higher Education (CertHE) or a Diploma of Higher Education (DiplHE).

Further information on these awards can be found at:
www.bath.ac.uk/quality/documents/QA3-certhe.pdf (for the CertHE)
www.bath.ac.uk/quality/documents/QA3-diplhe.pdf (for the DiplHE).

Procedures for Academic Appeals

Students wishing to submit a request for an academic appeal should refer to Regulation 17 (Conduct of Student Academic Appeals and Reviews):
www.bath.ac.uk/regulations /Regulation17.pdf

You are also strongly advised to read the online guidance provided by the Academic Registry: www.bath.ac.uk/registry/appeals

Independent advice about academic appeals is offered by the Students' Union Advice and Support Service: thesubath.com/support

Regulation 17.16 outlines how students may appeal against formal Board of Studies decisions in respect of one or more of the following:

i) the student's suitability to progress from one stage of the programme of study to the next
ii) the student's suitability to remain on the programme of study
iii) the marks/grades, degrees, certificates or diplomas, and the classifications/grades awarded to the student.

The regulation also sets out the grounds on which an appeal can be based. Please note that:

- dissatisfaction with a mark or set of marks, or any other aspect of the properly exercised academic judgement of the examiners, will not of itself be acceptable as a valid ground for an academic appeal (Regulation 17.1)
- students who have concerns about assessment outcomes that have not yet been approved by a Board of Studies should seek advice in the first instance from their Director of Studies. This may include matters such as suspecting errors in the totalling or transcription of marks/grades, or wishing to seek clarification about the marking process (Regulation 17.2).

All academic appeals must be submitted within the timescales set out in Regulation 17. Students must provide the required information and evidence, including a completed AA1 form. The form and further academic appeals guidance are available at: www.bath.ac.uk/registry/appeals

Student Complaints are dealt with under separate procedures:
www.bath.ac.uk/regulations/Appendix1.pdf

If you are uncertain as to whether your concerns are a potential academic appeal or a student complaint, please refer to the guidance at:
www.bath.ac.uk/students/support/complaints

General information

University Regulations for Students

All registered students of the University are subject to the University's Regulations for Students. The Regulations contain rules and other important information about being a student at the University of Bath, including regulations governing the payment of fees due to the University, student discipline, fitness to study and those governing attendance, conduct and progress in studies. They also form part of the formal contract between you and the University. You will find references to the requirements of the Regulations for Students throughout this Handbook. You are advised to download a copy of the Regulations and read them carefully as they contain a lot of important information.

Further information

The full Regulations for Students can be found at: www.bath.ac.uk/regulations

Registration Status

Note that only registered students may use the University's facilities, such as email, Moodle and the Library. You will be asked to register online at the start of your programme of study and then to re-register at the start of every academic year thereafter until you have completed your programme. It is a requirement that you register when asked to do so. Tuition fees for each academic year are payable at registration in full or in instalments.

Regulation 1.1 explains the requirement to register:
www.bath.ac.uk/regulations/Regulation1.pdf

Regulations 2.4 and 2.10 explain the consequences of non-payment of tuition fees:
www.bath.ac.uk/regulations/Regulation2.pdf

Attendance Monitoring

Guidance and requirements on attendance, including the University's Attendance Monitoring and Engagement Policy, are available at:
www.bath.ac.uk/students/visa-advice/attendance-monitoring

This page also sets out information on when and how to request an authorised absence.

Change in Your Circumstances

You must ensure that the University holds your correct, up-to-date, personal and academic details within SAMIS. If you change your address – either your semester-time or home address – please ensure that you update your details online at: www.bath.ac.uk/samis

If you change your name, you will need to provide valid proof of the change. Please speak to your Department or Faculty/School administration, or Student Services in the Roper Centre, for advice on how to do this.

If you are considering suspending your studies, transferring from one programme to another, or withdrawing from your programme, please discuss your situation with your Director of Studies. They will be able to advise you on an appropriate course of action.

It is a University Regulation (3.1) that you attend regularly; if circumstances are such that you are not able to do so, then please contact your Director of Studies to discuss your situation and agree an appropriate course of action.

Your Personal Tutor will also be able to provide support and guidance on matters relating to your programme.

The financial implications of withdrawing from the University or suspending your studies can be significant. You will find general information at: www.bath.ac.uk/students/finance/funding-advice/changes-to-your-study

The Student Money Advice Team in Student Services and the Student Finance Office will be able to advise you on the implications for fees in your situation and on how to suspend any student funding you are receiving.

If you are an international student holding a Tier 4 visa, you should consult the advisers in the Student Immigration Service about the implications of suspending or withdrawing from your programme: www.bath.ac.uk/visa

You will need to register any change of academic circumstance, including a change of optional units, with the University. Please speak to your Department or Faculty/School administration who will advise you on how to do this.

Health and safety

The University's Health and Safety Policy Statement and policies, standards, and guidance on specific topics are available at: www.bath.ac.uk/hr/stayingsafewell/hs-policy

The Policy Statement is also displayed throughout the campus. Staff within the University Health, Safety and Environment Service (Wessex House 3.12) provide professional advice on health and safety matters and monitor the health and safety performance of the University.

Further information

www.bath.ac.uk/hr/stayingsafewell or email: uhse@lists.bath.ac.uk.

Current University guidance on fieldwork and on work placements: www.bath.ac.uk/hr/stayingsafewell/working-off-site

Data protection

The University's Data Protection Policy and Guidelines on Data Protection may be accessed via the data protection website: www.bath.ac.uk/data-protection

Students undertaking projects that make use of personal information should be aware of the guidelines at www.bath.ac.uk/internal/data-protection/academic-research.html.

Equality and diversity

Everyone at the University of Bath has a responsibility for promoting equality and fostering good relations between all members of the community, students and staff, and also for eliminating unlawful discrimination, harassment and victimisation against anyone for reasons of age, disability, gender, pregnancy and maternity, race (this means colour, nationality including citizenship, ethnic or national origins), religion or belief,

sexual orientation, or transgender status. The new equality duty also covers marriage and civil partnership with regards to eliminating discrimination in employment.

Further information
There is a range of information and resources available at www.bath.ac.uk/equalities or email: equalsdiv@bath.ac.uk

Accessibility
An access guide is available which outlines the disabled access features and route plans at the University of Bath:
www.disabledgo.com/organisations/university-of-bath/main-2

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