



**Department of Mathematical
Sciences**
Faculty of Science



**Undergraduate Programme Handbook
2020-21**

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ABOUT THIS HANDBOOK

This is the 2020-21 Handbook 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 2020/21.

The contents of this Handbook are accurate at the time of publication [October 2020] but information contained within may sometimes be subject to change after this Handbook has been issued.

The Important Links and Information section of this Handbook includes links to information online about both the topics covered in this Handbook and other key topics. It is important that you familiarise yourself with the online information as well as the contents of this Handbook.

In August 2020 we wrote to you to explain how your programme has been adapted in response to COVID-19 safety measures and our 'Bath Blend' approach to learning and teaching for academic year 2020/21.

Information about the structure of your programme (which units you take when, which units are compulsory etc), as well as key unit information (including learning outcomes, synopsis and assessment), for the upcoming academic year can be found online in the Unit and Programme Catalogues (see **Unit and Programme Catalogues** in this Handbook and www.bath.ac.uk/catalogues). You will also receive details about unit content and assessment via the University's online learning environment, Moodle.

You will be informed, normally by your Director of Studies or Unit Convenor, of any further changes that will affect your programme or a unit. See also **Unit and programme changes 2020/21** in this Handbook.

You will be informed via announcements if any services offered by the University will need to be changed as a result of changing circumstances during 2020/21.

While this Handbook signposts information about regulations for students, it does not have regulatory status itself, and the Regulations available online (Regulations for Students: <http://go.bath.ac.uk/regulations> and Assessment Regulations: www.bath.ac.uk/corporate-information/new-framework-for-assessment) are the most up-to-date and take precedence over the contents of this Handbook. It is your responsibility to take the time to familiarise yourself with the Regulations.

If in doubt about what applies to you, or if your circumstances change, please contact your Director of Studies (maths-dos@bath.ac.uk) for advice.

IMPORTANT LINKS AND INFORMATION

UNIVERSITY INFORMATION ONLINE

This Handbook is an accompaniment to important information available to all students on the University's website. It is expected that you will familiarise yourself with the online information signposted below.

If you cannot find the information you are looking for in this Handbook or on the web please contact your Director of Studies (maths-dos@bath.ac.uk) in the first instance.



SUPPORTING YOU

Student Support Services

<https://www.bath.ac.uk/professional-services/student-services/>

SU Advice and Support Service

www.thesubath.com/advice

Equality, Diversity and Inclusion

<https://www.bath.ac.uk/professional-services/equality-diversity-and-inclusion/>

Advice for specific groups of students:

International students

www.bath.ac.uk/topics/visas

www.bath.ac.uk/guides/student-immigration-appointments-and-drop-in-sessions

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

www.bath.ac.uk/guides/academic-engagement-monitoring-for-tier-4-students

Care-leavers

<https://www.bath.ac.uk/publications/university-and-leaving-care/>

Estranged students

<https://www.bath.ac.uk/publications/university-and-estranged-students/>

Refugees

<https://www.bath.ac.uk/publications/university-and-refugees/>

Students with caring responsibilities

<https://www.bath.ac.uk/publications/university-and-young-adult-carers/>

Pregnancy and maternity

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



CORE UNIVERSITY SERVICES / INFORMATION

Dissatisfaction with a University service or facility (Complaints)

www.bath.ac.uk/guides/student-complaints-policy-and-procedure

Health and Safety

www.bath.ac.uk/guides/student-health-and-safety

Be Safe on Campus information (COVID-19)

<https://www.bath.ac.uk/campaigns/be-safe-on-campus-and-in-bath-during-the-covid-19-pandemic/>

Library and Study Spaces

<https://library.bath.ac.uk/home>

www.bath.ac.uk/campaigns/where-you-can-study-on-campus-and-in-the-city

Skills Support and Development

<http://go.bath.ac.uk/my-skills>

www.bath.ac.uk/campaigns/get-ahead-with-skills-at-bath

Learning Technologies & IT Support

<https://www.bath.ac.uk/professional-services/digital-data-and-technology/>

Careers Service

www.bath.ac.uk/professional-services/careers-service

Data Protection

www.bath.ac.uk/guides/data-protection-guidance

Bullying, harassment and victimisation

<https://www.bath.ac.uk/campaigns/report-and->

Disabilities, long-term illness, and specific learning difficulties

<http://go.bath.ac.uk/disability-service>

SUPPORTING YOUR LEARNING

Your Learning

www.bath.ac.uk/guides/your-learning

[Bath Blend](#)

Glossary

Year Dates and Timetables

Regulations for students

<http://go.bath.ac.uk/regulations>

Registration

www.bath.ac.uk/guides/registering-with-the-university

Withdrawing from or suspending your studies

www.bath.ac.uk/guides/suspending-your-studies-or-leaving-the-university

Placements

<http://go.bath.ac.uk/placements-information-for-students>

Personal Tutoring

www.bath.ac.uk/guides/personal-tutoring

Units and Programmes

www.bath.ac.uk/guides/about-units-and-programmes

Catalogues

Option choices

How your programme is reviewed and monitored

Student Representation and Engagement

www.bath.ac.uk/campaigns/student-engagement-shape-your-university

[support/](#)

SU Code of Practice and membership

www.bath.ac.uk/corporate-information/code-of-practice-for-the-students-union-su

Assessment

www.bath.ac.uk/guides/assessment-guidance-for-students

Assessment processes

Understanding your results

External examiners

Supplementary assessment

Academic Integrity

www.bath.ac.uk/campaigns/academic-integrity-training-and-test

Assessment Regulations

www.bath.ac.uk/corporate-information/new-framework-for-assessment

Definitions of assessment terms

Individual Mitigating Circumstances

www.bath.ac.uk/guides/reporting-individual-mitigating-circumstances-to-the-university

Academic Appeals

www.bath.ac.uk/guides/appealing-against-an-academic-decision

DEPARTMENT WELCOME 2020/21

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 – a mix of online and in person teaching activities. 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.

Professor Fran Burstall
Dr Merrilee Hurn
Dr Simon Shaw
Director of Studies (DoS) Team

ABOUT THE DEPARTMENT 2020/21

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.

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. You can also contact them via maths-admin-ug@bath.ac.uk

Student Pigeon-holes

Student pigeon-holes are located in 4 West Level 1 Foyer. These will not be in use during the COVID-19 pandemic.

KEY CONTACTS/STAFF LIST

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 2020/21 course tutors are:

- Dr Xiuping Su – BSc
- Dr Jey Sivaloganathan – MMath
- Dr Mark Opmeer – 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 Wessex House 1.13.

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 and there is an SSLC zone at: moodle.bath.ac.uk/course/view.php?id=30537.

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 or by email: maths-adm-ug@bath.ac.uk.

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 Hartmut Schwetlick and Professor Jey Sivaloganathan will be able to advise you. Contact them by email to maths-imc@bath.ac.uk.

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

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 and the Virgil Building.

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?

Examinations: We recommend that students take examinations if at all possible. It is essential that you inform the department's Mitigating Circumstances Team (email maths-ime@bath.ac.uk) and complete an IMC form as soon as possible, ideally before you take the examination, but certainly no later than three days after the first affected examination.

Coursework: In most cases, you should seek a coursework extension from the Director of Studies Team (email maths-dos@bath.ac.uk).

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.

Staff in the Department

Academic staff	Room	Ext
Dr Ben ADAMS	4W 4.6	6320
Dr Ben ASHBY	4W 4.14	6603
Dr Waleed ALI	2S 1.02a	6351
Dr Karim ANAYA-IZQUIERDO	4W 4.13	4644
Dr Jonathan BARTLETT	6W 1.7	4642
Dr Ruth BOWNESS	4W 5.11	5635
Prof Nicholas BRITTON	6W 1.3	6005
Prof Chris BUDD	4W 5.17	6241
Prof Francis BURSTALL	4W 3.39	6999
Prof Geoffrey BURTON	4W 3.35	5639
Prof David CALDERBANK	4W 3.41	6219

Dr Kirill CHEREDNICHENKO	4W 1.8	6891
Dr Thomas COTTRELL	2S 1.03	6288
Dr Alex COX	6W 1.13	6187
Dr Alastair CRAW	4W 3.49	5327
Prof Juan DAVILA	4W 4.15	5672
Prof Jonathan DAWES	4W 4.12	6223
Prof Manuel DEL PINO	4W 3.48	6066
Dr Sergey DOLGOV	6W 1.25d	6216
Dr Matthias EHRHARDT	6W 1.8	6194
Dr Evangelos EVANGELOU	4W 4.7	5673
Dr Jonathan EVANS	2S 1.06	6994
Prof Julian FARAWAY	4W 5.9	6992
Dr James FOADI	6W 1.28	3742
Dr Veronique FISCHER	4W 4.18	3205
Dr Silvia GAZZOLA	4W 5.7	5483
Prof Ivan GRAHAM	2S 1.04	6343
Dr Kari HEINE	6W 1.25b	5126
Dr Adrian HILL	4W 1.14	5329
Dr Merrilee HURN	4W 3.44	6001
Dr Antal JARAI	6W 1.16	4264
Prof Chris JENNISON	4W 5.12	5674
Prof Alastair KING	4W 3.46	3274
Dr Daniel KIOUS	6W 1.23	6186
Prof Andreas KYPRIANOU	4W 4.17	6200
Prof Hartmut LOGEMANN	6W 1.5	6011
Dr Daniel LOUGHRAN	6W 1.21	6184
Dr Cécile MAILLER	6W 1.25a	5304
Dr Karsten MATTHIES	4W 4.9	3858
Prof Paul MILEWSKI	4W 5.19	6224
Prof Roger MOSER	4W 4.16	6699
Dr Eike MÜLLER	4W 2.17	6470
Prof Monica MUSSO	4W 3.43	6015
Dr Johannes NORDSTRÖM	4W 1.10	4479
Dr Matt NUNES	6W 1.7a	4058
Dr Mark OPMEER	4W 2.14	6618
Dr Marcel ORTGIESE	4W 3.40	3618
Dr Sarah PENINGTON	4W 3.45	5641
Dr Andrea PIZZOFERRATO	4W 3.37	tbc
Prof Mathew PENROSE	4W 4.11	6222
Dr Clarice POON	6W 1.17	5493
Dr Tristan PRYER	4W 5.6	3789
Mr Steve RAPER	6W 1.28	3742
Dr Matthew ROBERTS	4W 1.13	5325

Prof Tim ROGERS	4W 5.13	6457
Dr Christian ROHRBECK	6W 1.18	6357
Dr Sandipan ROY	6W 1.6	5421
Prof Gene RYAN	4W 3.35	6010
Prof Gregory SANKARAN	4W 5.16	6220
Dr Hartmut SCHWETLICK	4W 5.10	6006
Dr Tony SHARDLOW	6W 1.11	6188
Dr Simon SHAW	4W 4.10	6106
Dr Pranav SINGH	6W 1.24a	5494
Prof Jeyabal SIVALOGANATHAN	4W 3.47	6003
Dr Geoff SMITH	4W 3.35	5639
Dr Theresa SMITH	4W 5.15	5803
Prof Alastair SPENCE	6W 1.5	6011
Prof Euan SPENCE	6W 1.12	6978
Dr Xiuping SU	4W 5.14	4738
Prof John TOLAND	6W 1.5	6011
Prof Gunnar TRAUSTASON	4W 3.42	3936
Dr Phil TRINH	4W 2.18	5331
Prof Hendrik WEBER	4W 2.20	6034
Dr Miles WHEELER	4W 1.12	5321
Dr Jane WHITE	3S 0.01	6242
Dr Kit YATES	4W 2.11	6605
Dr Luca ZANETTI	4W 3.36	tbc

About Your Programme

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".

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.

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 in the Placements section of this handbook.

PROGRAMME AIMS AND LEARNING OUTCOMES 2020/21

BSc Mathematical Sciences

For the BSc in 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.

The Learning Outcomes are:

Knowledge and understanding	<ol style="list-style-type: none"> 1. demonstrate knowledge and understanding of the fundamental concepts, principles, theories and results of the mathematical sciences; 2. construct and explain the meaning of complicated statements using mathematical notation and language; 3. understand and work with formal definitions; 4. state and prove key theorems from various branches of the mathematical sciences; 5. understand the mathematical and theoretical underpinnings of computability and computer languages and its importance in rigorous software development;
Intellectual skills	<ol style="list-style-type: none"> 1. demonstrate skill in mathematical reasoning, manipulation and calculation; 2. construct rigorous proofs; 3. demonstrate proficiency in different methods of mathematical proof; 4. demonstrate proficiency in a variety of standard statistical tests; 5. apply appropriate mathematical techniques to the development of advanced software solutions;
Professional practice skills	<ol style="list-style-type: none"> 1. demonstrate skill in mathematical reasoning, manipulation and calculation; 2. construct rigorous proofs; 3. demonstrate proficiency in different methods of mathematical proof; 4. demonstrate proficiency in a variety of standard statistical tests; 5. apply appropriate mathematical techniques to the development of advanced software solutions;
Transferrable key skills	<ol style="list-style-type: none"> 1. demonstrate skill in mathematical reasoning, manipulation and calculation; 2. construct rigorous proofs; 3. demonstrate proficiency in different methods of mathematical proof; 4. demonstrate proficiency in a variety of standard statistical tests; 5. apply appropriate mathematical techniques to the development of advanced software solutions; <p>In the case of students whose degree programme incorporates an industrial placement, they should also be able to:</p> <ol style="list-style-type: none"> 1. demonstrate an understanding of the general structure of their employing organisation and of the particular significance of the work they have undertaken; 2. 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; 3. demonstrate confidence in their own ability to appraise new information critically and to operate as part of a team. <p>In the case of students whose degree programme incorporates a study year abroad, they should also be able to:</p> <ol style="list-style-type: none"> 1. 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.

For the BSc Mathematics and 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.

The Learning Outcomes are:

Knowledge and understanding	<ol style="list-style-type: none"> 1. demonstrate knowledge and understanding of the fundamental concepts, principles, theories and results of mathematics, probability and statistics; 2. construct and explain the meaning of complicated statements using mathematical notation and language; 3. understand and work with formal definitions; 4. state and prove key theorems from various branches of mathematics, probability and statistics; 5. demonstrate knowledge and understanding of the principles of statistical modelling and analysis;
Intellectual skills	<ol style="list-style-type: none"> 1. demonstrate skill in mathematical and statistical reasoning, manipulation and calculation; 2. construct rigorous proofs; 3. demonstrate proficiency in different methods of mathematical proof; 4. demonstrate proficiency in a variety of standard statistical tests.
Professional practice skills	<ol style="list-style-type: none"> 1. choose, fit and critically assess various statistical models for 'real-life' data; 2. apply suitable methods of analysis to a variety of statistical problems, demonstrating an awareness of their advantages, limitations and required assumptions; 3. formulate methods of solution for a variety of mathematical and statistical problems and provide theoretical justification for the methods; 4. 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; 5. program a range of mathematical and statistical applications; 6. 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; 7. appreciate the relationship between fundamental concepts of mathematics and their application in other areas of mathematics or other disciplines.
Transferrable key skills	<ol style="list-style-type: none"> 1. communicate effectively with a wide range of individuals using a variety of means; 2. work effectively as part of a team; 3. make efficient use of computers for acquiring, analysing and presenting information; 4. think logically and analytically; 5. apply analytical methodology to problems in other disciplines;

	<p>6. assess numerical data critically.</p> <p>In the case of students whose degree programme incorporates an industrial placement, they should also be able to:</p> <p>7. demonstrate an understanding of the general structure of their employing organisation and of the particular significance of the work they have undertaken;</p> <p>8. 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;</p> <p>9. demonstrate confidence in their own ability to appraise new information critically and to operate as part of a team.</p> <p>In the case of students whose degree programme incorporates a study year abroad, they should also be able to:</p> <p>10. 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.</p>
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BSc Mathematics

For the BSc Mathematics 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.

The Learning Outcomes are:

Knowledge and understanding	<ol style="list-style-type: none"> 1. demonstrate knowledge and understanding of the fundamental concepts, principles, theories and results of mathematics; 2. construct and explain the meaning of complicated statements using mathematical notation and language; 3. understand and work with formal definitions; 4. state and prove key theorems from various branches of mathematics;
Intellectual skills	<ol style="list-style-type: none"> 1. demonstrate skill in mathematical reasoning, manipulation and calculation; 2. construct rigorous proofs; 3. demonstrate proficiency in different methods of mathematical proof;
Professional practice skills	<ol style="list-style-type: none"> 1. construct, and critically assess, mathematical models for real-world problems; 2. formulate methods of solution for a variety of mathematical problems and provide a theoretical justification for the methods;

	<ol style="list-style-type: none"> 3. 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; 4. program a range of mathematical and statistical applications; 5. 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; 6. appreciate the relationship between fundamental concepts of mathematics and their application in other areas of mathematics or other disciplines.
<p>Transferrable key skills</p>	<ol style="list-style-type: none"> 1. communicate effectively with a wide range of individuals using a variety of means; 2. work effectively as part of a team; 3. make efficient use of computers for acquiring, analysing and presenting information; 4. think logically and analytically; 5. apply analytical methodology to problems in other disciplines; 6. assess numerical data critically. <p>In the case of students whose degree programme incorporates an industrial placement, they should also be able to:</p> <ol style="list-style-type: none"> 7. demonstrate an understanding of the general structure of their employing organisation and of the particular significance of the work they have undertaken; 8. 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; 9. demonstrate confidence in their own ability to appraise new information critically and to operate as part of a team. <p>In the case of students whose degree programme incorporates a study year abroad, they should also be able to:</p> <ol style="list-style-type: none"> 10. 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.

BSc Statistics

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.

The Learning Outcomes are:

<p>Knowledge and understanding</p>	<ol style="list-style-type: none"> 1. demonstrate knowledge and understanding of the fundamental concepts, principles, theories and results of mathematics, probability and statistics; 2. construct and explain the meaning of complicated statements using mathematical notation and language; 3. understand and work with formal definitions; 4. state and prove key theorems from various branches of mathematics, probability and statistics; 5. demonstrate knowledge and understanding of the principles of statistical modelling and analysis;
<p>Intellectual skills</p>	<ol style="list-style-type: none"> 1. demonstrate skill in mathematical and statistical reasoning, manipulation and calculation; 2. construct rigorous proofs; 3. demonstrate proficiency in applying different methods of mathematical proof; 4. demonstrate proficiency in using a variety of standard statistical tests;
<p>Professional practice skills</p>	<ol style="list-style-type: none"> 1. choose, fit and critically assess various statistical models for 'real-life' data; 2. apply suitable methods of analysis to a variety of statistical problems, demonstrating an awareness of their advantages, limitations and required assumptions; 3. formulate statistical problems, carrying out explanatory data analysis and tackling non-standard data; 4. present results of statistical analysis in a clear report; 5. formulate methods of solution for a variety of mathematical and statistical problems and provide theoretical justification for the methods; 6. 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; 7. program a range of mathematical and statistical applications;
<p>Transferrable key skills</p>	<ol style="list-style-type: none"> 1. communicate effectively with a wide range of individuals using a variety of means; 2. work effectively as part of a team; 3. make efficient use of computers for acquiring, analysing and presenting information; 4. think logically and analytically; 5. apply analytical methodology to problems in other disciplines; 6. assess numerical data critically. <p>In the case of students whose degree programme incorporates an industrial placement, they should also be able to:</p> <ol style="list-style-type: none"> 11. demonstrate an understanding of the general structure of their employing organisation and of the particular significance of the work they have undertaken; 12. 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; 13. demonstrate confidence in their own ability to appraise new information critically and to operate as part of a team.

	<p>In the case of students whose degree programme incorporates a study year abroad, they should also be able to:</p> <p>14. 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.</p>
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MMath

For the MMaths 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.

The Learning Outcomes are:

Knowledge and understanding	<ol style="list-style-type: none"> 1. demonstrate knowledge and understanding of the fundamental concepts, principles, theories and results of mathematics; 2. construct and explain the meaning of complicated statements using mathematical notation and language; 3. understand and work with formal definitions; 4. state and prove key theorems from various branches of mathematics; 5. demonstrate knowledge in depth of a variety of mathematical topics; 6. demonstrate a mastery of selected advanced theories based on substantial background knowledge; 7. 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, content and skills at Masters level
Intellectual skills	<ol style="list-style-type: none"> 1. demonstrate skill in mathematical reasoning, manipulation and calculation; 2. construct rigorous proofs; 3. demonstrate proficiency in different methods of mathematical proof.
Professional practice skills	<ol style="list-style-type: none"> 1. construct, and critically assess, mathematical models for real-world problems; 2. formulate methods of solution for a variety of mathematical problems and provide a theoretical justification for the methods; 3. 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; 4. program a range of mathematical and statistical applications; 5. 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; 6. appreciate the relationship between fundamental concepts of mathematics and their application in other areas of mathematics or other disciplines;

Transferrable key skills	<ol style="list-style-type: none"> 1. communicate effectively with a wide range of individuals using a variety of means; 2. work effectively as part of a team; 3. make efficient use of computers for acquiring, analysing and presenting information; 4. think logically and analytically; 5. apply analytical methodology to problems in other disciplines; 6. assess numerical data critically. <p>In the case of students whose degree programme incorporates a study year abroad, they should also be able to:</p> <ol style="list-style-type: none"> 1. 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. <p>In the case of students whose degree programme incorporates a work placement, they should also be able to:</p> <ol style="list-style-type: none"> 1. demonstrate an understanding of the general structure of their employing organisation and of the particular significance of the work they have undertaken; 2. 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; 3. demonstrate confidence in their own ability to appraise new information critically and to operate as part of a team.
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PROGRAMME DESCRIPTION: STRUCTURE OF YOUR PROGRAMME

The structure for your programme year for 2020/21 can be found in the 2020/21 Unit and Programme Catalogues (see below). This is where you find important information on which units you are taking in which semester and if any units are 'designated essential units' (DEUs) that you must pass.

The content of the Programme Catalogues is correct at the time of publication. Programmes and units may be subject to reasonable change (see also **Unit and programme changes 2020/21** in this Handbook).

UNIT AND PROGRAMME CATALOGUES

This is where you will find details about all years of your programme as well as details about individual units for the current academic year.

The Catalogues also provide links to the relevant areas of the University's assessment regulations, showing how these are applied to this programme of study.

For the online Catalogues, please refer to **Important Links and Information** in this Handbook. See also the section in this Handbook on **Assessment**.

YOUR LEARNING

For 2020/21, the University has developed a blended learning approach called 'The Bath Blend' which combines in-person activities on campus, live interactive learning, and structured independent study.

The Bath Blend approach to programme delivery has been developed to be flexible in the face of possible changes in law, including measures on social distancing, which may occur through the course of this academic year.

Information on IT support and key software for this academic year is available online. Please refer to **Important Links and Information** in this Handbook.

YOUR TIMETABLE

Timetables are available as follows:

First years: your timetable is available for download from the Freshers Zone on Moodle: <https://moodle.bath.ac.uk/course/view.php?id=59218>.

Years 2-5: timetables for your MA units will be available on the individual unit Moodle pages as well as the Maths UG Zone at go.bath.ac.uk/mathsmoodle.

Timetables for your non-MA units can be found on MyTimetable: www.bath.ac.uk/timetable/MyTimetable.

We try not to make any changes to the timetable, but if this should occur (for example, if a lecturer is unwell and is unable to attend the lecture) you will be notified by email.

Full information is available online. Please refer to **Important Links and Information** in this Handbook.

PHYSICAL STUDY SPACE – 2020/21

As in previous years, you will be able to book study space on campus and in the city for individual or group study. Information on how to book, and the COVID-19 requirements, is available online. Please refer to **Important Links and Information** in this Handbook.

OPTION CHOICES

Information about how and when to choose your option units can be found at: <http://www.bath.ac.uk/catalogues/information/students/online-unit-selection>

You will receive an email notification at the relevant point in the year when online unit selection is available. If you want to discuss your option choices, please contact your personal tutor.

Details of MA units for years 2-4 and maps illustrating their interdependencies can be found in the section *Choosing options for next year* in the Moodle UG Zone: go.bath.ac.uk/mathsmoodle.

PERSONAL TUTORING

When you join 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.

Your Personal Tutor should arrange to meet with you on at least three occasions in your first semester 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 one-to-one meeting.

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

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. Any issues discussed with a personal tutor are subject to the University's confidentiality protocols. In particular, no information will be shared with third parties. 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 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. Where a tutor gives an academic tutorial to their first year tutor group, or arranges to meet their personal tutees in a group, there must be a weekly office hour set aside, where tutees can see the tutor one-on-one, without having to make an appointment. In addition, the tutor must explicitly invite their personal tutees to one-on-one meetings at least three times in the first term, and at least twice in the second term (to discuss Sem 1 results and to discuss options).
4. To inform the Director of Studies about any tutee who fails to attend meetings or respond to emails.
5. To inform the Senior Tutor if there are serious and unresolvable problems in the tutor/tutee relationship.
6. Any issues with a personal tutee are subject to the University's confidentiality protocols. In particular, information may not be shared with third parties. Where appropriate, concerns about a personal tutee should be reported to the Director of Studies. This is done by recording a SAMIS Student Note and sending an email to maths-dos@bath.ac.uk.
7. 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.
8. To be familiar with the information and resources provided in the Undergraduate Programmes Handbook and other items on the Maths Undergraduate Zone on Moodle.
9. To discuss examination results, and provide advice about choice of programmes and units, and other academic matters.
10. To write references for personal tutees, including after Graduation, upon request.
11. To record on SAMIS Student Note, at least once a semester, meetings with personal tutees. For first year tutees this should take place within the first two weeks of the semester.

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 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.

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.

PLACEMENT SUPPORT

The University is committed to enhancing students' vocational outcomes and learning experiences by supporting placements. We have 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 'key contacts' section at the start of the handbook.

If you have any COVID-related concerns then please contact the placements team.

For some placements, there is a requirement for a Disclosure and Barring Service (DBS) check and you should liaise with the placement support team for further guidance.

Before going on placement you will receive a University Placement Handbook containing generic advice and information for whilst you are on placement. 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, in person or remotely, 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 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.

A re-induction activity will be conducted to welcome you back from placement and update you on any changes that may have occurred at the University during your time away.

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.

STUDENT EXCHANGE/STUDY ABROAD

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. 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.

Currently the department has exchange links with a number of universities in: Australia, Canada, Hong Kong, Mexico, New Zealand, Singapore, South Africa, South Korea, USA, Austria, France, Finland, Germany, Poland and Spain. These places are awarded by Faculty-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 or any COVID-related concerns, see the Maths Undergraduate Moodle Zone or the SYA Tutor.

UNIT AND PROGRAMME CHANGES 2020/21

All programme and unit changes are managed through formal University processes. This is to ensure that changes are academically appropriate, properly supported and are done in a way that safeguards the interests of students.

In addition to the Bath Blend approach to delivery of your programme in 2020/21, which has already been put in place, it is possible that further changes to your programme may be required. These are more likely to be part of continual development aimed at enhancing your learning experience and maintaining high academic standards and quality. Such changes could be, for example, to update content to reflect latest developments in a particular field of study, or to respond to student feedback on delivery and/or assessment. 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.

As we have already experienced, it is sometimes necessary to make changes due to unforeseen or unavoidable circumstances. Outside of the global pandemic, this could be for reasons such as:

- the accrediting body requiring changes to be made to the course, or,
- being unable to run an option unit because too few students selected it.

When this happens, we always try to ensure that the impact on students is minimised and that those affected are informed of the changes at the earliest opportunity.

Information on how we assure the quality and standards of your programme of study is available online. Please refer to **Important Links and Information** in this Handbook.

GIVING FEEDBACK ON YOUR PROGRAMME TO THE UNIVERSITY

The University is committed to continually improving its practice and aims to engage students as active partners in their education (Education Strategy 2016-21). The three main ways in which your feedback will be sought will be through:

- Staff / Student Liaison Committees (SSLCs)
- surveys and evaluations
- the Students' Union.

Full information is available online. Please refer to **Important Links and Information** in this Handbook.

ASSESSMENT

Full information is available online. For signposts to important information on many aspects of assessment, please refer to **Important Links and Information** in this Handbook.

Any exam-based assessment during the 2020/21 academic year will be online. More information on assessment arrangements for this year, including online assessment, will be provided via the University webpages and updated as necessary.

SUBMISSION DEADLINES

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.

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 from your Department. You will need to provide a description of 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.

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.

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 from your Department. You will need to provide a description of 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**. Forms to request an extension are available from the Department.

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.

FEEDBACK ON ASSESSMENT

During your course, you will receive feedback on your assessed work. This feedback may take different forms, depending on the subject and 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 exam-type assessment, you may receive general feedback relevant to all who took the assessment 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.

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 problem sheets and reflect upon the feedback provided

Placements

Students are required to make a poster presentation on their return from placement.

Staff Responsibilities

- Staff, normally the industrial training tutor, will provide feedback on each poster.

Student Responsibilities

- The student will prepare and deliver a poster presentation on their placement activities.

ACADEMIC INTEGRITY

The University has a wide range of resources available to you to help you understand academic integrity and enhance your academic writing and practice.

It also has in place an Academic Integrity Test you are required to take and pass (the pass mark is 85% but you can take the test as many times as you need to). You will not be able to progress beyond the next progression point in your studies until you pass this test.

When you submit assessment, 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 a plagiarism detection service (currently Urkund), which searches the web and databases of reference material and content submitted by other students, to identify duplicated work. Where practical, all summative assessment is submitted to this service to check for similarities as an initial indicator of whether work has been plagiarised and an assessment offence committed.

Submission of your assessment to the Plagiarism Detection Service - Data Protection statement

The Plagiarism Detection 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) and may make, or authorise third parties to make, copies of any such work for the purposes of:

- 1) assessment of the work
- 2) comparison with databases of earlier work or previously available works to confirm the work is original
- 3) 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.

Assessment offences – penalties

Any student who is found to have used unfair means in an assessment procedure will be penalised. 'Unfair means' here include cheating, fabrication, falsification, plagiarism, unfair collaboration or collusion. Penalties for use of unfair means 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. You have the right to appeal against the outcome of the investigation.

Important information on academic integrity, the Plagiarism Detection Service, assessment offences and penalties, and support, as well as the Academic Integrity Test itself, is available online. Please refer to **Important Links and Information** in this Handbook.

IF CIRCUMSTANCES IMPACT ON YOUR ASSESSMENT ATTEMPT

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 about IMCs is available online. Please refer to **Important Links and Information** in this Handbook. **It is strongly advised that you become familiar with the available guidance and related regulations.**

If you know of a potential IMC that may affect your assessment before you begin an examination period or before a submission date, it is important that you speak to the Department's IMC team as soon as possible. Our IMC Officers Dr Hartmut Schwetlick and Professor Jey Sivaloganathan will be able to advise you. Contact them by email to maths-imc@bath.ac.uk. After speaking to the Department's IMC team, if you do intend to submit a formal IMC claim for the assessment(s) you feel were affected, 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 assessment where practicable. 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.

If examinations are conducted on-line with submission to Moodle, it is not possible to mark 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 academic appeal can only be made in relation to a confirmed result (see the section in this Handbook on **Academic Appeals**).

Scaling: 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. A Board of Examiners can decide to recommend a change to the provisional marks, based on evidence that there was a problem with the assessment which means the initial marks do not reflect the standards achieved by students. This adjustment is known as scaling and under these circumstances the marks of all affected students will be changed.

External Examiner: An External Examiner is someone from another University or professional organisation who is qualified and experienced in the field of study. At least one External Examiner is appointed for each programme or group of programmes. The role of External Examiner is an important one in assuring that assessment processes are fair, academic standards are appropriate, and supporting the development of your programme. External Examiners review draft assessment and samples of assessed work, and attend Boards of Examiners. They are members of Boards of Examiners.

Once a year, the External Examiners will provide a written report. University staff, including the Head of Department and Director of Studies, will look at these reports and a response will be made to the External Examiner's comments. External Examiner reports and responses are made available to students. Staff/Student Liaison Committees (SSLCs) also discuss External Examiner reports as part of routine monitoring activity.

The External Examiner(s) for your programme is (are):

- Pure Mathematics – Professor Gordon Blower, Lancaster University
- Applied Mathematics - Professor Stephen Gourley, University of Surrey
- Statistics - Professor Daniel Stahl, King's College London
- Probability - Dr Jon Warren, University of Warwick

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 **Academic Appeals** and **Dissatisfaction with a University Service or Facility (Complaints)** give some more information about the University's procedures for student complaints and academic appeals. The University's mechanisms for student representation are designed to enable students to engage with the quality management process through which the University considers and responds to External Examiners' comments and suggestions.

Full information is available online. Please refer to **Important Links and Information** in this Handbook.

Prizes: 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.

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

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.

James Duthie Prize for Statistics

James Duthie had a long association with the statistics group and studied on the MSc in Applied Statistics course in the past. The prize is awarded, on the basis of

performance in the final year, 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 and external examiners in Statistics under the chairmanship of the Head of the Statistics Group.

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.

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.

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.

The full NFAAR-UG, a student introduction to it, and definitions of terms used in it, are available online. Please refer to **Important Links and Information** in this Handbook.

YOUR PROGRAMME AND HOW YOU ARE ASSESSED

Within a 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 there may also be optional units (i.e. those units students may choose from a range of options).

In the Programme and Unit Catalogues, 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.

There are some units that you must pass in order to progress to the next stage of your programme and to achieve the normal award for the programme at the end. Such units are called Designated Essential Units (DEUs). Failure in a DEU – even marginal failure – will prevent you from progressing (or completing) your programme.

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 DEUs, you will have to undertake supplementary assessment - unless you have failed so many DEUs that you fail the stage outright
- if you fail any non-DEUs 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 fail only non-DEUs 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 Programme and Unit Catalogues. Stages in Part 1 are not included in the OPA calculation.

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.

Academic year dates, including the supplementary assessment period, can be found online. See **Important Links and Information** in this Handbook.

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

More information on arrangements for the 2020/21 academic year will be provided via the University webpages and updated as necessary.

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:

- if you fail supplementary assessment in a DEU, you will fail the stage
- if you fail supplementary assessment in a non-DEU badly, you will fail the stage
- if you fail supplementary assessment in a non-DEU 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 (DipHE).

ACADEMIC APPEALS

If you wish to submit a request for an academic appeal you should refer to Regulation 17 (Conduct of Student Academic Reviews and Appeals), which outlines the process and grounds for an appeal against formal Board of Studies decisions.

You are also strongly advised to read the online guidance on Appeals provided by the Academic Registry.

Independent advice about academic appeals is offered by the Students' Union Advice and Support Centre.

Full information is available online. Please refer to **Important Links and Information** in this Handbook.

CORE UNIVERSITY 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 are strongly advised to read them carefully as they contain a lot of important information.**

For a link to the full Regulations for Students, see **Important Links and Information** in this Handbook.

ACCESSING UNIVERSITY EMAIL

You will need to use your University username and password to access your University email account. Your username also forms your email address (**username@bath.ac.uk**).

The University will often communicate with you about a range of important matters requiring action from you, including registration, assessment, degree ceremonies, and matters such as tuition fees, via your University email account. It is a University regulation 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.

Once you graduate or withdraw from your course, you will receive an email stating exactly when your account will be closed. The email will give at least 30 days' notice.

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. Information on opting out of this membership, and the Code of Practice for the Students' Union, are available online. Please refer to **Important Links and Information** in this Handbook.

DATA PROTECTION

The University's Data Protection Policy and Guidelines on Data Protection may be accessed via the data protection website (see **Important Links and Information** in this Handbook).

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. Regulations 2.4 and 2.10 explain the consequences of non-payment of tuition fees.

ACADEMIC ENGAGEMENT MONITORING FOR TIER 4 STUDENTS

Guidance and requirements on academic engagement for students who are Tier 4 visa holders, including the University's **Academic Engagement Monitoring Policy for Tier 4 visa holders**, and information on when and how to request an authorised absence, are available online. Please refer to **Important Links and Information** in this Handbook.

CHANGE IN YOUR CIRCUMSTANCES

It is important to ensure that the University holds your correct, up-to-date, personal and academic details within SAMIS, the University's student records database. If you change your address – either your semester-time or home address – please update your details online (see **Important Links and Information** in this Handbook).

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, 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.

The financial implications of withdrawing from the University or suspending your studies can be significant. See Important Links and Information in this Handbook.

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. See Important Links and Information in this Handbook.

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.

DISSATISFACTION WITH A UNIVERSITY SERVICE OR FACILITY (COMPLAINTS)

We want to ensure that, if you have a problem concerning the University, it is resolved as quickly as possible. The University is committed to continuing review and improvement, and seeks regular feedback from students. There are student representatives on the University's formal decision-making committees who can raise issues so that they can be dealt with promptly. The University is also committed to providing an environment within which students are encouraged to raise any

matters of concern in an informal manner as soon as they arise. This often removes the need for formal complaints.

It is expected that most complaints can be resolved at an early stage by discussing the matter informally at a local level. If you have a problem concerning the University, you should bring the matter to the attention of an appropriate member of staff, who will aim to resolve it by informal discussion. If you have attempted to resolve matters informally but are not satisfied with the outcome, you may elect to proceed to the next stage by submitting a formal complaint. You may also submit a formal complaint if the issue involved is too complex or serious for informal resolution.

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**. 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.

There are separate procedures for requesting a review of progression or award classification decisions. See the section in this Handbook on **Academic Appeals**.

The University recognises that making a complaint can be stressful. Students are therefore advised to seek advice and support before making a complaint, from Student Services, or from the Students' Union Advice and Support Centre, whose advice is independent of the University.

Full information is available online. Please refer to **Important Links and Information** in this Handbook.