

Department of Physics

Mathematics & Physics Years 1-4



UNIVERSITY OF
BATH



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 s.kennedy@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 4 May 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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1 Welcome

Welcome to the 2017-18 academic session of your Mathematics and Physics programme!

This handbook is designed to give a comprehensive overview of the undergraduate degree programmes offered by the Department of Physics. It contains the key information you will need as an undergraduate student within the Department, so please familiarise yourself with its contents and save this URL as one of your favourites, so that you can refer to it throughout the year. If you have any questions regarding procedural or other aspects of your course, do look in this handbook first; you may well find the information you need. If you cannot find the answer to your question in the handbook, please consult your tutor, your Director of Studies, the Undergraduate Programmes Administrator, or the Director of Teaching and Resources.

Best wishes for a successful and enjoyable year with us!

Dr Frances Laughton
Director of Teaching and Resources
September 2017

1.1 About This Handbook

This Handbook is intended for all students on the following programmes (including all Study Year Abroad and Placement variants) in the academic year 2017/18:

- BSc (Hons) Mathematics and Physics;
- MSci (Hons) Mathematics and Physics.

Please note that the contents of this Handbook are accurate at Friday 22nd 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 students**, 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 (Dr Steven Davies) for advice.

In the following pages a number of job titles are referred to; for the 2017-18 academic year the people who have responsibility for these positions are:

Role	Name
Head of Department of Physics	Prof Carole Mundell
Head of Department of Mathematical Sciences	Prof Paul Milewski
Director of Teaching and Resources & Chair of Department Learning, Teaching & Quality Committee	Dr Frances Laughton
Director of Studies for Maths & Physics	Dr Steven Davies
Director of Studies for Years 1 & 2 Physics	Dr Gary Mathlin
Director of Studies for Years 3 & 4 Physics	Dr Andriy Gorbach
Senior Tutor	Dr Gary Mathlin
Placement Tutor	Dr Peter Mosley
Faculty of Science Placements Manager	Ms Louise Oliver
Study Year Abroad Tutor	Dr Andriy Gorbach
Departmental Library Liaison Rep	Dr Sergey Gordeev
Students' Union Liaison Officer	Dr Frances Laughton
UG Programmes Administrator	Mrs Santina Kennedy

This handbook is available online on the Moodle course page for Mathematics and Physics students. It is also available in alternative formats on request; please contact the Director of Teaching and Resources should you require this.

The details of the degree schemes in this handbook are correct at the time of publication. However, the Departments of Physics and Mathematical Sciences and/or the University may, after due consideration and consultation, make changes to degree programmes, regulations, etc. for this and/or future academic years. If in any doubt, please consult the Director of Teaching and Resources.

1.2 Department of Physics Teaching and Admin Staff

Name	Role	Tel. ext.	Room	Email prefix (@bath.ac.uk)
Dr Steve Andrews	Senior Lecturer	6651	3W 5.9	s.r.andrews
Prof Simon Bending	Professor	5173	3W 3.6	s.bending
Prof David Bird	Professor	3383	3W 3.11A	d.bird
Prof Tim Birks	Professor	4711	3W 3.17B	t.a.birks
Dr Philippe Blondel	Senior Lecturer	5237	WH 3.46	p.blondel
Dr Richard Bowman	Prize Fellow	3042	3W 3.17A	r.w.bowman
Dr Stephen Clark	Lecturer	4539	3W 2.2A	s.r.clark
Dr Simon Crampin	Senior Lecturer	4808	WH 3.41	s.crampin
Dr Enrico Da Como	Reader	4368	WH 3.40	e.da.como
Dr Steven Davies	Senior Lecturer & Director of Studies (Maths & Physics)	6472	3W 4.20	s.r.davies

Dr Hendrik van Eerten	Lecturer	3193	WH 3.48	h.j.van.eerten
Mr Martin Fullick	Teaching & Research Support Technician	5175	3W 3.20C	m.b.fullick
Dr Andriy Gorbach	Lecturer, Director of Studies (Years 3&4 Physics) & Study Year Abroad Tutor	6307	3W 3.3A	a.gorbach
Dr Sergey Gordeev	Senior Lecturer & Departmental Library Rep	5154	3W 4.17	s.gordeev
Dr Adelina Ilie	Lecturer	6898	3W 4.16	a.ilie
Dr Richard James	Senior Lecturer	5467	3W 2.2D	r.james
Mrs Santina Kennedy	Undergraduate Programme Administrator	3673	3W 2.03	s.kennedy
Dr Frances Laughton	Director of Teaching & Resources	4361	3W 3.16	f.r.laughton
Miss Joanna Łucyszyn	Undergraduate Programme Administrator	5579	3W 2.03	j.z.lucyszyn
Dr Gary Mathlin	Senior Teaching Fellow, Director of Studies (Years 1&2 Physics) & Senior Tutor	6441	3W 3.4	g.mathlin
Dr Peter Mosley	Lecturer & Placement Tutor	4567	3W 4.5C	p.mosley
Dr Marcin Mucha-Kruczynski	Lecturer	6169	3W 5.14B	m.mucha-kruczynski
Prof Carole Mundell	Professor & Head of Department	5645	WH 3.53	c.g.mundell
Dr Alessandro Narduzzo	Teaching Fellow	3324	3W 3.3B	a.narduzzo
Dr Alain Nogaret	Senior Lecturer	5609	3W 4.19	a.r.nogaret
Dr Josh Nunn	Reader	5207	3W 4.2A	j.a.s.nunn
Prof Philip Salmon	Professor	3698	3W 5.1	p.s.salmon
Dr Victoria Scowcroft	Prize Fellow	3042	3W 3.17A	v.scowcroft
Prof Dmitry Skryabin	Professor	3178	3W 3.15	d.v.skryabin
Dr Peter Sloan	Lecturer	4566	3W 4.5B	p.sloan
Dr Paul Snow	Senior Lecturer	6897	3W 3.11A	p.a.snow
Dr Kei Takashina	Lecturer	5395	3W 5.2	k.takashina
Dr Ventsislav Valev	Royal Society Research Fellow & Reader	3370	3W 2.2B	v.k.valev
Dr Carolin Villforth	Lecturer	5420	WH 3.49	c.villforth
Prof William Wadsworth	Professor & Deputy Head of Department	6946	3W 3.14	w.j.wadsworth
Prof Alison Walker	Professor	3322	3W 3.5	a.b.walker

Ms Isabel Wells	Undergraduate Laboratory Technician	5369	3W 3.19	i.wells
Prof Nigel Wilding	Professor & Director of Research	4164	3W 2.2C	n.b.wilding
Dr Jennifer Williams	Undergraduate Laboratory Technician	5369	3W 3.19	j.williams
Dr Daniel Wolverson	Reader	3321	3W 2.4	d.wolverson
Dr Stijn Wuyts	Senior Lecturer	4598	WH 3.51	s.wuyts
Dr Anita Zeidler	Royal Society EPSRC Dorothy Hodgkin Reseach Fellow	4565	3W 4.18	a.zeidler

2 Description of Degree Programmes

2.1 Background to and broad aims of the degree programmes

The University of Bath offers undergraduate degree programmes in Mathematics and Physics which lead to the qualification of Master of Science (MSci) or Bachelor of Science (BSc). There are three BSc degrees: a three-year full time programme, and four-year programmes with a placement year or a study year abroad. Similarly, there are three MSci degrees: a four-year full time programme, and five-year programmes with a placement year or a study year abroad. The degree programmes are described in detail in the sections below. The way in which students register for a particular programme or change their registration during their course of study is described in chapter 3. Further details on all of our programmes are available at <http://www.bath.ac.uk/catalogues/2017-2018/ph/ph-proglist-ug.html>.

The Mathematics and Physics degree programmes 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”. They are genuinely joint degree programmes, with an approximately 50:50 split between the two disciplines, and reflect the natural affinity of mathematics and physics. The aim is for students to understand the rigour and generality which form the foundations of a University education in mathematics, while at the same time appreciating the role of physics in providing an understanding of the physical world and the ways in which physics and mathematics can be applied to “real-world” problems.

The degrees are taught by members of the Departments of Physics and Mathematical Sciences, with the Department of Physics taking primary responsibility for students as their “host department”. Both Departments aim to provide a stimulating and supportive environment that will encourage students to be receptive to new ideas and attain their full academic potential; they have a long tradition of cooperation in undergraduate teaching, with a sizeable number of students from each taking optional courses offered by the other.

Our degree programmes are fully compliant with the “Framework for Higher Education Qualifications” drawn up by the Quality Assurance Agency (QAA) for Higher Education. This framework prescribes graduates’ expected level of achievement and knowledge, for example the “M level” outcomes expected of an MPhys/MSci graduate, and the “H level” outcomes expected of someone receiving an honours BSc degree. There are also more specific subject benchmark statements, such as “Physics, Astronomy and Astrophysics” (<http://www.qaa.ac.uk/en/Publications/Documents/SBS-Physics-Astronomy-and-Astrophysics-17.pdf>) and “Mathematics, statistics and operational research” (www.qaa.ac.uk/en/Publications/Documents/SBS-Mathematics-15.pdf). The programme specifications for our degree programmes, which provide detailed information on the intended knowledge, understanding, skills and attributes of a student completing that course, can be found at www.bath.ac.uk/science/programme-specifications/.

2.2 Professional body accreditation

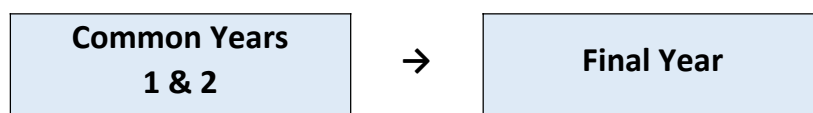
All of our BSc and MSci Mathematics and Physics programmes are fully accredited by the Institute of Physics. Accreditation allows our graduates to become members of the Institute of Physics. The

Institute of Physics currently requires an accredited integrated MPhys/MSci degree for Chartered Physicist status; BSc Physics graduates partially fulfil the IoP's educational requirements for CPhys, but will have to demonstrate equivalence to an accredited integrated Masters degree during the application process.

The undergraduate programmes in Mathematics and Physics are designed around a common first two years, which covers the core material included within single Honours degrees in Mathematical Sciences and Physics. After that the programmes differ, reflecting the possibility of a placement year or study year abroad, and the different demands of BSc and MSci degrees.

2.3 Full time BSc degrees

The three-year BSc programmes have the pattern:



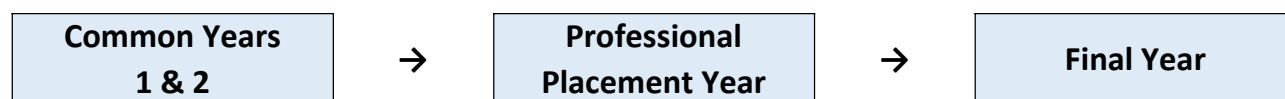
with degree titles (and University codes):

USXX-AFB03 BSc in Mathematics and Physics

This degree provides the most direct route to an Honours degree in Mathematics and Physics. The first year consists of 36 credits of mathematics units and 24 credits of physics units (including laboratory work). These units provide the foundations for knowledge and understanding of the fundamental principles of mathematics and physics, a theme that continues in the second year where a similar mix of units further develop students' abilities to think clearly and logically, to appreciate rigorous proof, and to use a scientific approach to the analysis of problems. In the final year students have the opportunity to choose from a wide selection of units, and through them to utilise their knowledge and skills in the formulation, analysis and solution of a diverse range of problems in mathematics and physics.

2.4 BSc degrees with professional placement year

This four-year BSc programme includes a placement year and has the following pattern, programme code and title:



USXX-AKB04 BSc in Mathematics and Physics with placement

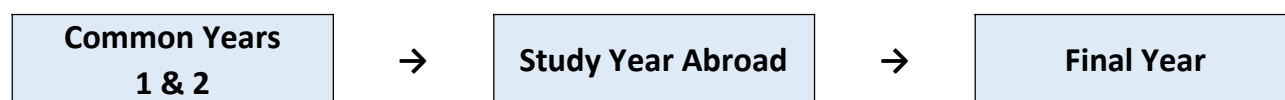
The final year of this programme contains the same allowed choice of final year units as for the full-time BSc degree. Students taking a degree with a professional placement year spend the third year of their degree programme pursuing a project in an approved company or research organisation. The professional placement year helps to develop the awareness, maturity and self-confidence that graduate employers seek. The year is assessed, but does not contribute towards a student's degree classification.

During the professional placement year students are employees of the company/organisation and the great majority are paid for their work, usually at rates similar to those of graduates. Most placements are in the UK, but may also take place in mainland Europe, or elsewhere. Students

are given help and guidance in obtaining placements, and the Department has close and long-standing relations with a number of organisations which host placements. Ultimately, however, a professional placement year depends on a company offering a job to the student, and for this reason placements cannot be guaranteed. More details about the professional placement year can be found in Chapter 5.

2.5 BSc degrees with a study year abroad

This four-year BSc programme includes a study year abroad and has the following pattern, programme code and title:



USXX-AAB04 BSc in Mathematics and Physics with study year abroad

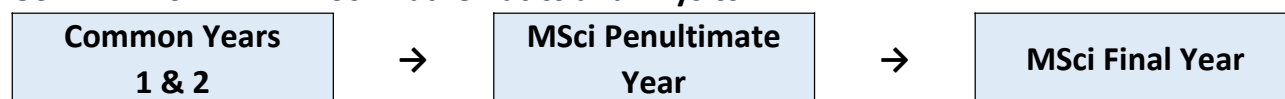
The final year is again identical to that of the equivalent full-time BSc degree.

Students taking a degree with a study year abroad spend the third year of their degree programme studying at an overseas university. The aim is to allow students to gain knowledge of a foreign language and/or culture, and to widen their experience as an undergraduate. For BSc degrees, students have a good deal of freedom to choose their programme of study, and the year abroad does not count towards their degree classification.

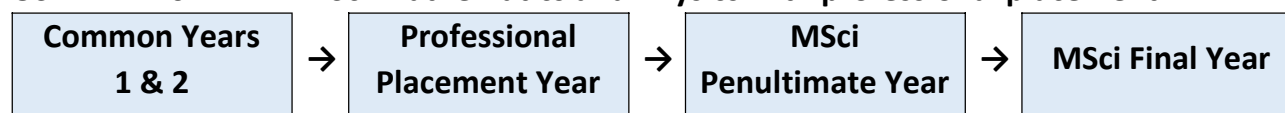
2.6 MSci degrees

There are three MSci degree programmes in Mathematics and Physics:

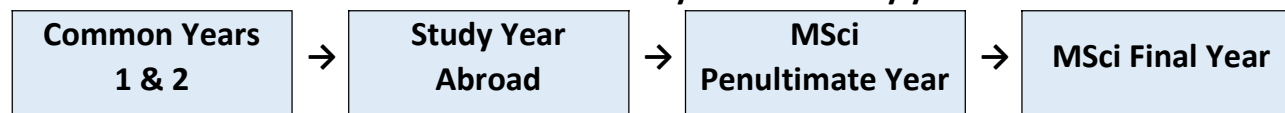
USXX-AFM01 MSci Mathematics and Physics



USXX-AKM01 MSci Mathematics and Physics with professional placement



USXX-AAM01 MSci Mathematics and Physics with study year abroad



The MSci programmes are designed for students who wish to study to a greater depth and breadth than is possible within the BSc programmes. They provide a unified, coherent, and broadly-based training in applied mathematics and physics, and are aimed at the most able and committed students who intend to take up employment in a field making direct use at a high level of their training in mathematics and/or physics, whether in academic research or industry. Students registered for an MSci degree who fail to reach a satisfactory standard in their first or second year examinations are required to change their registration to BSc.

3 Course Structure

3.1 Semesters and units

Degree courses at Bath are modular, with degree programmes built upon a set of individual courses, referred to as units. The units fit into a semester pattern. Each semester lasts for about 14 weeks, of which 11 are teaching weeks and the remaining weeks form the revision/assessment period. With a few exceptions (detailed below), units taken in the teaching period of a semester are examined in the associated assessment period. The first semester has its 11 teaching weeks running from October to December, with the revision/assessment period occurring in January. The teaching period of the second semester is usually split either side of the Easter break. Full details of the dates of the academic year are available at <http://www.bath.ac.uk/corporate-information/academic-year-dates/>.

In each semester you will take units to a value of at least 30 credits. Most units are of value 6 credits, so that students usually undertake 5 units each semester, with the overall assessment for each year based on the marks obtained in 10 units. In addition, students may take an optional eleventh unit during years 1 and 2, for example in Languages, Education, etc (as described in Section 3.10). Although credits are awarded for these courses and the marks appear on the students' transcripts, the marks obtained do not contribute towards the overall year mark or degree classification. Details of the assessment procedures, including the system of credits and marks, and the rules for progressing from year to year, may be found in Chapter 7 and Appendix A.

3.2 How units build into programmes

Degree programmes consist of a number of units with a total credit value of 60 taken in each year (<http://www.bath.ac.uk/catalogues/2017-2018/ph/ph-proglist-ug.html>). In the first and second years all units are compulsory. The final year of the BSc programmes and the penultimate and final years of the MSci programmes consist of a combination of compulsory and optional units. Each unit has an associated University code, the first 2 letters of which show which Department delivers the unit. Units given by the Department of Physics have the code PHx****, where x refers to the level of the unit, and units delivered by the Department of Mathematical Sciences have a code beginning MA. The grids in Appendix A show the units which comprise the MSci and BSc degree programmes described in Chapter 2, indicating the choices available on these different programmes.

3.3 Units provided by other departments

It can be seen from the grids in Appendix A that the Mathematics and Physics programmes contain units described as “Director of Studies approved Unit” where students can choose from the full range of units provided across the University. Any such choice must be approved in advance by the Director of Studies and agreed by the Department Learning, Teaching and Quality Committee.

Even if a unit appears in the grids as an option in another named degree programme, it should not be assumed that it can be taken as “another approved unit”. Explicit approval must be obtained. The Director of Studies will employ the following guidelines in granting approval for such units:

- You must be able to meet any pre-requisites for the unit. Note that pre-requisites might include A-levels not mentioned in the unit description but assumed for all home students in the other department. For example, students on biology units will be assumed to have Biology A level or equivalent;
- The department delivering the unit must agree to you attending their unit;
- There should be little overlap with units that you have taken or will take;
- The unit marks must be available in time for our final year (and penultimate year MSci) Programmes Board of Examiners; this means that a Level 1 or 2 unit cannot normally be approved in Semester 2 unless it is a Generally Available Unit;
- It must be at an appropriate level. Language units will not be allowed unless they are at an advanced level;

You will not be permitted to take too many non-mathematical science or engineering units. For example, if you take ED30005 and ED30006, we would not approve an additional non-mathematical science or engineering unit as a DoS-approved unit.

It must be possible to accommodate the unit within any timetabling constraints. You will not be able to continue with your DoS-approved unit if there is a serious timetable clash.

Note that “Generally Available Units” are designed so as to satisfy many of the conditions listed above automatically, and one of these is therefore likely to be approved as a Director of Studies approved unit. The current list of Generally Available Units can be found in the University of Bath Programme and Unit Catalogues web pages at (<http://www.bath.ac.uk/catalogues/2017-2018/zz/UXXX-AFN99.html>).

3.4 Details of units

A complete listing of all units currently included within the Mathematics and Physics degree programmes can be found at <http://www.bath.ac.uk/catalogues/2017-2018/ph/PH-units.html>. As well as the title and University code these describe the Aims and Learning Objectives of each unit and give an outline of their content. Please note that the content of the programme description is correct at the time of publication and that units are subject to reasonable change.

Other important information in the Unit Description is how the unit will be assessed. Assessment may take place by means of examination (EX), coursework (CW), laboratory work (PR) or essays (ES). Students should ensure that they know the relative weighting of all forms of assessment for the units that they study, and spend the appropriate amount of time working for these unit marks.

The aims and learning objectives of the units give the broad intent of the course, followed by some typical tasks that students should be able to do when they have studied the unit. This is followed by a listing of the content of the course. The level of detail given can vary from unit to unit, and students should be aware that these descriptions are not prescriptive, but indicative of

the content of the course. Lecturers may choose which elements to emphasise or focus on within these guidelines. The only way to know absolutely what you need to know is to attend the lectures and other classes, and participate fully in the course. The content of units build upon previous knowledge, and the requisites listed in the unit description indicate the most important relationships between units. To study a particular unit, students must satisfy the pre-, co- or post-requisites that are listed. If in doubt, you should consult your Director of Studies.

3.5 Lectures, problems classes, laboratories, etc

The majority of units follow common patterns of teaching and learning. For physics units there are three one-hour slots timetabled each week during the 11 week teaching period, two of which are usually used for whole-class lectures with the third for problems classes or other learning and teaching activities. However, individual lecturers may decide to use the slots in a different way, although the total number of whole-class lectures in a unit will always be close to 20. In all cases, lecturers should provide a timetable at the start of the unit showing how the timetabled slots will be used. In addition to the two lectures and problem class, some mathematics units have additional tutorial classes for problem solving activities, whilst some physics units have laboratory sessions associated with them. Units with the standard teaching pattern have a two-hour examination in the assessment period at the end of the semester; details are given in Chapter 7.

Lecturers use a variety of formats for lecture delivery, such as “chalk and talk”, overhead transparencies, or Powerpoint presentations. The Department believes that it is beneficial for students to encounter a variety of teaching methods and lecture formats, and supports the autonomy of lecturers in determining which format they wish to use. You should remember that, although you may hold strong views on which lecture format you prefer personally, student questionnaires regularly show that there is no general consensus among our students on a single “best format” for lecturing. You should also note that lecturers are not under any obligation to provide students with printed lecture notes, and that those lecturers who choose to do so are not obliged to make these notes available to students on the internet.

In the first and second years the slots within physics units not used for lectures are usually used for problems classes, based around problems sheets which are handed out in lectures or the problem class. These classes may involve either the whole group registered on the unit or, more usually, half the group. Students should be informed well in advance of which classes they should attend. In the final year the non-lecture slots may be used for problems classes, but they are also commonly used as “office hours” where lecturers are available to help individual students with the course.

Some units differ significantly from the standard pattern, including the Programming Skills unit in year 2, Contemporary Physics, the Computational Physics units, and the BSc and MSci final year project units. More information about these units may be found at <http://www.bath.ac.uk/catalogues/2017-2018/ph/PH-units.html> and in Appendix C, and students are given detailed information concerning the teaching and assessment arrangements at the start of each of these units.

3.6 Timetables

Programme and unit timetable information can be found online at: www.bath.ac.uk/timetable.

You can also use MyTimetable to create a customised programme timetable that can be downloaded into an electronic calendar: www.bath.ac.uk/timetable/MyTimetable.htm.

3.7 Expectations and responsibilities

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.

You are expected to attend lectures, problems classes, tutorials and laboratory classes. Announcements about the unit, for example, the timetable of lectures and problems classes, changes to this timetable, details of coursework, the structure of the examination etc., are usually made in lectures. It is your responsibility to be aware of any such information provided in lectures and problems classes. In some circumstances you will be informed about changes in a unit by a notice on the departmental notice board, or by emails to your University email account.

As outlined in the previous Sections, you will have around 30 contact hours with the lecturer(s) on a standard 6-credit unit. However, this is far from being your total workload; it is expected that each unit should involve around 120 hours of study. You should be aware that you are expected to spend around 90 hours in private study for each unit in order to learn successfully. The most common cause of poor performance and of academic failure is to fail to take this seriously.

As a guide, private study time should normally consist of background reading, problem solving, report writing, revision etc.; all of which contribute to a student's understanding of the unit. In private study, it is essential that you look through lecture notes, improving their clarity and supplementing them with material from textbooks. This is best done on the day of the lecture, or at the latest the following day. Note down those points that you do not understand properly, and clarify them with the lecturer, your tutor, or with fellow students. You must take the general overview of a lecture and personalise it to enable your learning and understanding of the subject.

You should include study of past examination papers in your private study. These can be obtained from the library loan desk, and are also accessible at www.bath.ac.uk/library/exampapers. However, you will not do well if you just try to memorise answers to past questions without genuine understanding.

Students sometimes find it particularly difficult to manage their time on coursework-based units, such as the laboratory and project units, Contemporary Physics, Problem Solving Skills, Computational Physics, Industry Team Project and Communicating Physics. There can be a temptation to spend a disproportionate amount of study time on the coursework within these units, in the hope that by investing extra time you can squeeze a few more marks out of the unit. However, this extra time has to come from somewhere, and more often than not it is the study time for your exam-based units that will suffer, with obvious consequences for the marks in these units. We recommend that you decide at the start of each semester how much study time to

devote overall (as stated above, this should be around 120 hours per 6 credits), and make sure you stick to this target for all units, including coursework-based ones. This should help you to maximize your overall performance across all assessments.

3.8 Missing classes due to illness

If you are ill for a short period there are a number of actions you should take on your return:

- You should see the lecturers in all lecture courses missed as soon as you return and obtain any missed handouts, including problems sheets;
- You should copy (and study) the lecture notes of someone who was at the missed lectures, preferably before the next scheduled lecture in that subject;
- You should see lecturers in practical, computing etc. classes to ascertain what you should do in these areas about missed sessions;
- Where appropriate, you should follow the guidance listed in the Individual Mitigating Circumstances Section of this handbook.

3.9 Lines of communication

It is often necessary for students to be contacted or provided with information, sometimes at short notice. It is your responsibility to check daily your University email account, as well as to regularly check the appropriate undergraduate notice board and the alphabetical pigeon holes (both just outside the Department Office (3W 2.03)). Students wishing to contact members of staff can do so by email (see the preface for contact details) or by leaving a message in the Department office.

You should also make sure that the University is informed of any changes in outside contact details (University and parental address, telephone numbers, including mobile etc.) by keeping your contact details in SAMIS up to date. For example, the mailing of any items to you during vacations will be affected if the information that is held in SAMIS is not correct.

Post addressed to individual students c/o The Department of Physics, The University of Bath, Claverton Down, Bath BA2 7AY will be delivered to the pigeon holes in Physics Square. Because of public accessibility, the Department of Physics cannot accept responsibility for the safe delivery of post via the pigeon holes.

The University will often communicate to you a range of important matters including registration, unit-enrolment, assessment, and degree ceremonies, 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 regulation that you access your University email account regularly, including 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.

3.10 Language and Education options

In Years 1 and 2, in addition to the basic 10 units, students can opt to take units in Languages or Education. Although marks obtained on these optional units appear on a student's transcript they do not contribute towards the overall year mark, and so have no effect on a student's progression from year to year. The list of available language units can be found at www.bath.ac.uk/flc/university-students/ug/index.html. Education units are offered as single units in each semester (<http://www.bath.ac.uk/catalogues/2017-2018/zz/UXXX-AFN99.html>).

3.11 Choice of programmes and units, and changing between programmes

At the start of their first year, all students register on one of the degree programmes described in Chapter 2. However, there is a considerable amount of flexibility in the system and students are allowed to change their registration from one degree to another, provided they obtain permission from the Director of Studies and complete the appropriate form. There are, however, a number of important deadlines after which a change of degree programme cannot be made:

- Students who wish to undertake a placement or a study year abroad (whether as part of a BSc or MSci programme) should register on a relevant programme and inform the respective members of staff as early as possible within their second year.
- Students who wish to change between different named BSc degree programmes must do so within two weeks of the start of their final year.
- Students can transfer from a BSc to an MSci degree programme during Years 1 and 2, but may only progress or transfer to the penultimate year of an MSci degree programme if they meet the required standard in their second year examinations. Details are given in the web links referred to in Appendix A.

You will be asked to select your units for the following academic year on-line during April (prior to the start of the Semester 2 exams). By making your choices online this information is fed into the timetabling process, and your choices will assist with setting the timetable for the following year. Once you have made your unit choices, these cannot normally be changed. However you may make a case to your Director of Studies to change your optional unit choices if you think you meet one or more of the following criteria:

- You have changed degree programme and this requires a change of unit;
- You have a timetable clash with a pre-registered unit choice;
- You have not fulfilled the pre-requisite requirements for a pre-registered unit;
- The withdrawal of a unit necessitates a change of a pre-registered unit choice;
- You pre-registered on a unit but the unit was over-subscribed;
- Your Director of Studies has advised you to alter a pre-registered unit choice for academic reasons.

If your Director of Studies allows you to change your unit choices, the deadline for making this change is Wednesday of the first week of teaching

3.12 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.

3.13 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.

4 Academic and Personal Tutorials

4.1 Tutors and tutorials

Every student is allocated a Personal and Academic Tutor when they first enter the Department; they will help you to get the best out of your university experience and can guide you to sources of expert help – whether on academic progress or personal/welfare issues – when or as you may need it. The Department values the academic and pastoral roles of tutorials highly; although academic tutorials are not a University requirement, we invest a considerable amount of time and effort into them. Our departmental Senior Tutor (Dr Gary Mathlin) is responsible for allocating tutors, and he explains the operation of the tutorial system to new undergraduates during their induction days, including the procedures for changing tutors if necessary.

Normally you can expect to retain the same personal and academic tutor throughout your undergraduate years at the University. If you should have reason to wish to change your personal and academic tutor, please contact the Senior Tutor to discuss the matter.

Further Information:

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

The success of tutorials depends on commitment being shown by both tutors and tutees. Tutors meet their first and second year tutorial groups on a weekly basis, although additional meetings can be scheduled on an individual basis if requested by the student. Tutorial groups usually consist of around five students. Tutorials are compulsory in Years 1 and 2, and will normally last for the full 50 minutes allocated. Final year students and penultimate year MSci students may be allocated a weekly slot for tutorials, to be used at their discretion. You have an obligation to attend every tutorial, or to send apologies in advance if you have to miss a session. Remember that if you do not get to know your tutor, they will be unable to provide you later with a reference for your career. If you fail on several occasions to meet with your tutor as expected, this will be reported to your Director of Studies.

In an SSLC review of our tutorial departmental system, students welcomed our informal tutorial system, whereby students and tutors can tailor the time to meet their individual needs; they did not wish for this to be compromised by tutorials being forced to run with the same structure. The same review found that the majority of students view the tutorial system as very important, for varying reasons. Some viewed it as a way to have ‘silly’ questions answered easily, others as an important personal link to the Physics department or simply a way to meet other Physics students.

4.2 Role of tutors

The conduct of tutorials is left to individual tutors and their tutees. The strength of the system relies on the development of a good and trusting relationship between tutor and student, and this should not be impaired by intrusive formality. However, tutors have a number of important roles in monitoring the progress of students and assisting them through their course:

- Tutors should provide opportunities for students to query, discuss and develop the material presented in lectures and problems classes. They also support departmental

induction and skills development activities, and provide a personal contact and rapport in case of pastoral issues.

- Tutorials should generally be student-led, with any problems/queries being brought up by students and answered by the other students and the tutor. However tutorials will sometimes 'grind to a halt' due to students having no questions. On these occasions the onus is on the tutor to direct the tutorial, for example using one of the suggested activities listed in Section 4.3. There is never a shortage of things to do at tutorials!
- Tutors should provide opportunities for students to discuss current scientific developments, including upcoming public lectures that may be of interest to students, current departmental research and their tutor's area of research. For first and second year students this information can be difficult to come across and scientific language difficult to digest; an informal setting such as a tutorial can therefore be a useful place to discuss these things.
- Marked coursework assignments, laboratory reports, etc. are channelled back to students via their tutors. This allows the tutor to gauge their tutee's attendance and performance, enabling tutors to offer appropriate guidance and to have early warning of any problems.
- Tutors read drafts of laboratory reports in Years 1 and 2 and advise students in particular of any deficiencies in the structure, presentation, or written English. Tutors also give feedback on marked lab reports and provide suggestions for improvements.
- Tutors write references for their tutees, both in the context of finding placements and after graduation. In this regard students should keep their tutors informed of any notable sporting, social or other achievements each year.
- Students who are undertaking a placement may be visited at their place of work, usually by their tutor. The tutor will also normally read a student's placement report.
- Tutors should familiarise themselves with any factors which may affect their tutees' performance, and ensure that appropriate matters are recorded in the student's file. If students have personal problems of a serious nature the personal tutor may be able to assist them to find appropriate counselling and advice, e.g. through the University Counselling Service, or the Welfare Office of the Students' Union.
- Tutors will monitor their tutees' attendance at tutorials and will notify the Senior Tutor of any issues of concern in relation to individual tutees.
- Tutorials should continue within their standard weekly slot during revision week.

4.3 Suggestions for activities within tutorials

The following are suggested activities that staff or students may like to initiate in tutorials. Tutorials should combine pastoral and academic elements, and staff and students should feel free to pick and choose a good variety of activities from the lists below, or to initiate activities not specifically mentioned.

Pastoral

- Tutors should spend part of each tutorial asking their tutees what they have spent their week doing outside of lectures (e.g. how is life generally, whether any problems,

accommodation, placement applications etc.). This enables the tutor and tutees to find out more about each other and general university life.

- Once a semester tutors should arrange to see each of their tutees individually for a 10 minute appointment (within one of the regular tutorial slots) to discuss any issues that students might not want to voice in the group. Tutors should ensure that tutees know that they are welcome to request a one-to-one meeting with their tutor at any time if they wish to discuss a personal issue which would not be appropriate to raise in the scheduled weekly tutorials.

Academic activities

- Discussing units/lecture notes and providing help with specific problems.
- Discussing problems sheets, for example with students attempting problems on the board, and the tutor providing help where needed.
- Discussing students' laboratory reports, as well as general report writing tips (eg. what makes a good graph, the meaning of error bars, scientific writing style).
- Exam preparation - discussing the general ingredients of a model answer to an exam question. Tutors might ask students to hand in a written solution to a problem or an exam question, to be discussed within the group or returned with written feedback.
- Providing an overview of current units - trying to give students the 'big picture' of what a unit covers, why it has the structure and content that it does, and its relationship to other units.
- 'Join the dots' - the group 'brain dumps' to the board about a topic. The tutor's role is to help the students to fill in any gaps and make connections, so that the big picture emerges.

Context and department

- Providing an overview on our programmes - trying to give students the 'big picture' on how our programmes fit together, and about how certain groups of our units in years 1 and 2 form 'strands' that feed into later units.
- General discussion about the types of research taking place in the department, research groups and their staff memberships, including any recent highlights of departmental research. This could include chat about the tutor's own research and a visit to the tutor's research lab.
- Discussion about more general scientific developments - tutors might introduce discussion topics on current scientific developments they are aware of (not necessarily related to Physics), might discuss what they have spent their week doing, might provide science research updates from the University or the Department, or might mention upcoming scientific public lectures, and possibly discuss (pre or post lecture) some of the themes and questions arising from it.

Generic skills

- Presentation skills - students could be asked to prepare a 5-10 minute presentation about a topic of interest to them, to be presented to the group from the board.
- General problem solving ability - the tutor might pick a random physics problem from everyday life or from a course text book, for the tutorial group to try to work on together.

- Tutors should be aware of the information and resources on study skills, plagiarism etc. that are provided for students by the University, and should direct students to these resources.

5 Placements

5.1 Overview

Placements have been a major component of our undergraduate programmes at Bath since the foundation of the University. It has been our experience over more than forty years that this period in an external research or development organisation forms a significant part of our students' personal and scientific development and training. A side benefit of the placement programme is that it provides the Department with a direct and continuous link to the activities and needs of potential and actual employers of our graduates; this is hard to achieve in as diverse an employment field as that of physicists by any other means. In addition, the interaction with industry and government laboratories can bring benefits to other areas of the Department's activities, particularly in the development of postgraduate research links.

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).

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.

Further Information:

University Placement Handbook / Information for Placement Students:

www.bath.ac.uk/internal/placements/information-for-students.bho

5.2 Professional Placements (unit PH20040)

All students have the option to spend a year of their BSc or MSci degree programme working on a professional placement in a research establishment or in industry. Students become a member of professional teams within their placement organisation; many opportunities exist to acquire specialised skills that can be put to good use during the final academic year, besides providing students with greater confidence, experience and maturity when applying for graduate employment. A number of students choose to explore opportunities outside science and engineering – particularly in the financial and management consultancy fields where problem solving, mathematical and reporting skills are sought after.

5.3 Obtaining a placement

Placements are arranged during the second year, students wishing to undertake a placement must therefore be registered on a relevant degree programme as early as possible in year 2. Placements are coordinated by the Placement Tutor and the Faculty Placements Manager, who liaise with students and prospective employers in the placing of students, and are responsible for monitoring and supporting students while on placement. While the Placement Tutor and the Faculty Placements Manager will make reasonable efforts to help and advise every student who wishes to undertake a placement to secure a suitable position, it is made clear to students at the start of the process that the availability of placements cannot be guaranteed. The probability of securing a placement and the type of work carried out during the placement are mainly dependent on a student's academic performance to date, and there may be additional external factors outside the control of either the student or the University.

The Department maintains a portfolio of potential placement providers in the UK and in several countries abroad. A dedicated Moodle course is used to advertise placements and store useful information such as how the placement scheme works, where students have been before and what they worked on. The student selects a range of possible employers, with the advice of the Placement Tutor and/or the Faculty Placements Manager, and usually applies directly, usually via a web site or application form in response to an advertised opportunity. In a minority of cases, the Placement Tutor and/or the Faculty Placements Officer may submit a curriculum vitae to personal contacts within an organisation for positions which are not generally advertised. Students are encouraged to make enquiries of their own and to use family and other contacts. However, the Placement Tutor and/or the Faculty Placements Manager must be consulted before accepting a placement, in order to ensure the professional level of the placement, that adequate supervision, safety and insurance measures are in place, and that the employer understands the University's requirements. All placements involve a competitive interview. The long track record of our degree programmes, the high quality of Bath students, and the dedication of our Placement Tutors and Placements Officers have all played their part in enabling Bath students to be placed in high-quality environments, despite a considerable increase in the competition for places from other institutions.

5.4 Support while on placement

Before leaving the University to embark on the placement, students attend a briefing session with the Placement Tutor and/or the Faculty Placements Manager, when the University requirements for the placement and the expectations of a commercial employer are stressed. At the same time, the Student Money Service explains how the placement period works with regard to tax, council tax, loan, insurance etc. The main points of contact with the University while on placement are the Placement Tutor, the Faculty Placements Officer and the student's Personal Tutor. Students are encouraged to keep in contact via e-mail or telephone.

During the placement students will complete an initial Personal Objectives and Learning Outcome (POLO1) form. This initial POLO form is intended to help students to start planning their personal development over the course of the placement. After completing six months on placement, students undertaking a professional placement will revisit their personal objectives and reflect on what has been achieved so far. Further objectives will be set to help ensure that students are able to fulfil their full potential by the end of the placement year. At the end of the placement all students complete a final POLO form that allows reflection on their achievements and development. The POLO forms are submitted to the Placements Moodle course during the year, and are included in the appendix of the Placement Report written at the end of the placement.

Every three months, students ask their placement supervisor/manager to complete a Goals Objectives and Learning Form (GOLF). This provides students with direct feedback on their progress, and informs the objectives set for the following three months. These reports are also uploaded to the Placements Moodle course.

Students are visited by a member of staff during their placement, who discusses the student's POLO1 form with the student, and their progress and performance with their supervisor/manager.

5.5 Assessment of professional placements

A Placement Conference is held at the end of the professional placement year, during which students are required to give an oral presentation on their work. They also submit a written report on their professional placement year. Although the professional placement year does not contribute towards the degree classification awarded, satisfactory performance is recorded on the student's transcript. Further information on the assessment of professional placements may be found in Appendix C.

6 Study and Support: Getting the most out of your studies

6.1 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 <http://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

6.2 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

6.3 Moodle

Moodle (moodle.bath.ac.uk) 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.

<https://moodle.bath.ac.uk/enrol/index.php?id=2329>

6.4 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

6.5 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:
<http://go.bath.ac.uk/skills>

6.6 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

6.7 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:

www.bath.ac.uk/library/subjects/physics/index.html

For information on all library services and resources: www.bath.ac.uk/library/

6.8 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: <http://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.

Within the 3West building the Department of Physics has additional computing facilities available to students, both in the undergraduate laboratories and in the student workrooms, adjacent to the Physics Square and on level 4.

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 learning difficulty: go.bath.ac.uk/assistive-technologies

E-learning: www.bath.ac.uk/e-learning/

IT shop: go.bath.ac.uk/ITshop

Computing Services Twitter Feed: @UniofBathIT

6.9 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

6.10 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) (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=2160

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

6.11 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

6.12 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: <http://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

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

6.13 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

6.14 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

6.15 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/index.html

Mediation Service Manager: 01225 383098 or equalsdiv@bath.ac.uk.

Students' Union Advice and Community Manager: 01225 385863 or suadvice@bath.ac.uk.

6.16 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

6.17 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/

6.18 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

6.19 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).

7 Assessment

7.1 Assessment of units

The nature of assessment varies from unit to unit, but for most (i.e. those which follow the standard teaching patterns described in chapter 3) there is a two hour written examination held during the assessment period at the end of the relevant semester. For physics units this exam usually carries 85% or 100% of the marks for the unit, with the remaining marks based upon assessment of laboratory work or other coursework. For mathematics units the exam is usually worth either 100% of the marks for the unit, or 75%, with the remaining 25% based upon assessment of coursework. The following sections describe the structure of examination papers and some examination regulations, and describe the nature of coursework.

7.2 Coursework and its assessment

Where present, assessed coursework typically carries 20% or 25% of the marks in a standard unit (Appendix C outlines the assessment patterns for non-standard units). In general coursework can take many forms, but coursework for standard mathematics units usually takes the form of an extended and structured set of problems.

Students should be informed of the approximate schedule for setting and submission of coursework assignments at the beginning of each unit. Students can expect their coursework to be assessed as promptly as possible, and should be provided with feedback on the assignment, often receiving back their work with marks and comments.

Course work for most Year 1 and 2 physics units is formative, i.e. it does not contribute towards the unit mark. Formative coursework enables students to gain feedback on their knowledge and understanding, and hence to improve their performance. It also encourages students to keep up to date with lectures and problems sheets, enables approaches to learning that develop understanding of the subject, and provides lecturers and personal tutors with immediate feedback on students' progress.

Unit lecturers should inform students of the formative assessment method(s) that they will use at the beginning of each unit. These might include "spot tests" or other informal testing in lectures and problems classes, and written assignments, such as past examination questions, questions from problem sheets or essays. Students should also be informed of the schedule for setting and submission of coursework assignments.

7.3 Guidelines for written coursework

Unless instructed otherwise, students should follow the guidelines below in their assessed written coursework, and they should note that failure to do so may lead to marks being deducted. These guidelines refer to the written coursework associated with a standard unit. For non-standard units, students will be given guidance by the unit lecturer(s) about the appropriate form for submitted reports, etc.

- Written coursework tasks will normally have a word range or limit. You will be required to declare the word count when submitting work for assessment and there are penalties for non-compliance which should be stated in writing when the assignment task is distributed.
- Work should be submitted on white, A4 ruled sheets. The student's name should be at the head of every sheet, the tutor's name should be on the first sheet and the whole script should be stapled together. Use a biro or pen, not a pencil.
- Work should be submitted by the time and date requested and to the place indicated by the lecturer. Marks will be deducted for late submission; details are given in section 7.14.
- All questions should be numbered and clearly separated from each other. Pages should also be numbered and if a question goes to the next page write (for example) "Question 5 continued" at the top of the next page.
- The questions need not be written down but the answer should indicate clearly and succinctly where each step was taken, what symbols stand for (unless on the question paper) and where each numerical stage comes from. Marks are usually given for a discussion of the steps taken and the structure of the answer, and not just for the final result.
- Working should be consistent with data supplied in problems. For example, if data is supplied to 3 significant figures, all working should be to at least 3 significant figures and the answer quoted to the appropriate number of significant figures, consistent with the precision of the data. Errors (if appropriate) should be quoted to at most 2 and possibly 1 significant figure. The 9 significant figures produced by a calculator should never be written down and intermediate or final stages never reduced to 1 or 2 significant figures. You should appreciate the difference between 5 and 5.00.
- Intermediate and final answers should always have units attached (if appropriate)

7.4 Guidelines for students about sitting examinations

If you feel unwell shortly before taking an examination, you are advised to go to the Medical Centre as soon as possible. In almost all circumstances students are encouraged to sit their examinations as scheduled, even if this involves special arrangements being made. The Director of Studies is the only member of staff who can give a student definitive advice as to whether or not to sit an examination in these circumstances. If the Director of Studies is not available then advice can be sought from the Director of Teaching and Resources, the Head of Department or from a personal tutor.

You should only request a Medical Certificate for serious illness or at times when examinations or pieces of assessed work are compromised by ill health. Medical Certificates are normally only issued after an illness of more than five working days. You should note that it is very difficult to obtain retrospective Medical Certificates and that doctors cannot be asked to provide a Medical Certificate for any illness about which they have not been consulted.

Students should always bear in mind that they are ultimately responsible for the actions they take, or do not take, if they are unfortunate enough to be ill around assessment time.

7.5 Marks and credits

The normal unit pass mark is 40%. As well as marks, units also carry credits, as can be seen in the unit descriptions at <http://www.bath.ac.uk/catalogues/2017-2018/ph/ph-proglist-ug.html>. The majority of units are worth 6 credits, but some are worth more (for example, the full-year 60-credit professional placement unit), and some are worth fewer (for example, the 3-credit optional final year units). Students have to take units totalling 60 credits each year, with 30 credits in each semester.

7.6 Prizes and awards

The Department of Physics awards a number of prizes to students who perform particularly well in various categories. Those for which students registered for Mathematics and Physics degrees are eligible are:

- The David Bullett Prize, awarded for best performance in the Second Year;
- The Ayliffe Prize, awarded for best performance in the Final Year.

The Chancellor's Prize is awarded to the best final year undergraduate student across the University. Nominees should have demonstrated academic excellence together with a contribution to the life, academic reputations and general work of the University. Students are invited (and encouraged) to nominate themselves or a fellow student for this award. Two BP Centurion Awards are also awarded to final year undergraduate students in the Faculty of Science on the basis of academic excellence and contributions to the life, reputation and work of the University and community.

There are also University of Bath Teaching Awards, which encourage and recognise significant contributions by staff to the academic lives of students. The Innovation in Learning and Teaching Award is intended for a member of staff who makes a significant contribution to innovation in curriculum design, content or delivery. The John Willis Award recognises accomplishment in research combined with a significant contribution to teaching, including pastoral support for students. The Mary Tasker Award recognises excellence in teaching in the University. The Leadership in Learning and Teaching Award recognises exceptional examples of leadership in learning and teaching. Students are invited (and encouraged) to nominate any of their lecturers for these awards.

7.7 Department of Physics Feedback on Assessed Work Policy

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 of Physics Feedback on Assessed Work Policy

Feedback on assessed work is an integral part of the assessment process. The purpose of feedback is to help you to better understand your strengths and weaknesses, so that you can further improve your learning. The feedback you receive should enable you to evaluate the quality of your work, to compare your performance with the ideal, to build on your successes, to reflect on your learning, and to understand what action you need to take to correct your mistakes and misunderstandings.

You will receive feedback on your work and progress throughout the academic year in a number of different ways. Feedback can be formal or informal, written or verbal, and may be provided individually or to a group, for example to the whole class. The nature and amount of feedback that is given will vary, depending on the nature of the unit and the type of assessment involved.

Feedback on formative assessments (i.e. assessments that do not contribute towards the unit mark) is more likely to be informal and oral. As an example, day to day interactions with staff and students in problems classes, laboratories and tutorials will provide you with regular feedback on your progress and enable you to clarify particular concerns. The feedback that you gain on formative assessments such as mock exams can be usefully thought of as “feed-forward”: since it is provided before the main summative assessment, it enables you to ascertain and reflect upon your current level of knowledge and understanding, and hence to improve your future performance.

Feedback on summative assessment (i.e. assessments that do contribute towards the unit mark) will include the marks that you obtain for that item of assessment, and may also include individual or group feedback in a written or verbal form. Some units use pro-forma feedback sheets, which may include tick-boxes or lists of feedback statements that may be highlighted by the lecturer as appropriate. These feedback sheets may include detailed assessment criteria, and may be combined with individual written or verbal feedback. Continuing students receive general feedback on exams by means of a report written by the unit lecturers, summarising performance on each question, and these reports may be found on the Moodle course page for your student year group.

Students are also offered the opportunity to view their marked examination scripts after each semester, in the presence of their Director of Studies or another member of staff. You should note that this process is solely for the purpose of receiving general feedback on your exam performance, and that no remarking will take place. You are also advised that lecturers do not write many comments on exam scripts when they mark them, and that most comments written on exam scripts will be directed towards the other members of staff (and the External Examiner in the case of 2nd, 3rd and final year units) who check the marking on the script, to explain how marks have been arrived at. The feedback that you can gain from this process is therefore more likely to be “big picture”, rather than being necessarily particularly detailed. For example, you are unlikely to be able to use this opportunity to gain detailed feedback on why you obtained a particular number of marks for a particular question, but this process may help you to learn whether you are providing an appropriate amount of detail in bookwork questions, or whether there are issues in the way you set out your mathematical working.

You are provided with feedback on your level of achievement in each of the units studied during an academic year by viewing your unit results on SAMIS. In addition to feedback on individual units, you will also periodically receive more general feedback on your overall progress. This feedback is provided in the form of credit-weighted averages displayed on SAMIS and by your transcript, which provides a formal record of your performance. You also have the opportunity to request a discussion of your general progress with your tutor or the Director of Studies. The Director of Studies will particularly wish to hold such discussions with students who appear to be “at risk”.

Responsibilities of Physics staff with regard to feedback:

- Within their role as unit lecturers:
 - i. to inform students of the methods of assessment and feedback that will be used within the unit at the beginning of each unit;
 - ii. to provide students with general feedback on performance in the unit’s examination;
 - iii. to provide students with the opportunity to undertake at least one piece of formative assessed coursework within each ‘standard’ lectured unit, and to provide them with feedback on this formative assessment to enable them to ascertain their current level of knowledge and understanding and help them understand how they can improve their future performance;
 - iv. to mark work and provide feedback to students in a timely manner, i.e. normally within three semester weeks following the submission deadline for the assignment.
- Within their role as tutor:
 - i. to be aware of their tutees’ overall performance;
 - ii. to provide feedback on their tutees’ draft laboratory reports;
 - iii. to provide their tutees with the opportunity to discuss their general progress on an individual basis.
- Within their role as Director of Studies, to provide students with the opportunity to discuss their general progress on an individual basis;
- Within their role as project supervisors, to provide students with the opportunity for regular weekly contact to discuss progress, and to provide feedback on students’ draft project reports.

Responsibilities of students:

- To attend all timetabled sessions within units and to undertake all assessments (both summative and formative) within units;
- To attend all tutorial sessions and to avail themselves of the opportunities for receiving feedback on their performance from their tutor;
- To reflect upon and engage positively with the feedback provided to them on these assessments, and to use this feedback to deepen their knowledge and understanding.

7.8 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**': <http://moodle.bath.ac.uk>

If you have any access problems, then please contact Mrs Santina Kennedy 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

7.9 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

7.10 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:

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

Academic integrity: www.bath.ac.uk/asc/study-skills/academic-integrity.html

Library resources: www.bath.ac.uk/library/infoskills/referencing-plagiarism

Students' Union Skills Training: thesubath.com/skills-training

7.11 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

7.12 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.

7.13 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 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**.

7.14 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.

7.15 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.

7.16 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 Examiner for your programme is:

- Dr Edward McCann, Department of Physics, Lancaster University.

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.

7.17 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

For information relating to your programme in the current academic year, visit:

www.bath.ac.uk/catalogues/

7.18 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.

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.

7.19 How your performance is assessed

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' such as the MSci Mathematics and Physics 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, for the MSci Mathematics and Physics programmes, 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, for the MSci Mathematics and Physics 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 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.

7.20 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.

In units where the original assessment is a written examination, supplementary assessment may sometimes take the form of reworking an examination paper, known as ‘mandatory extra work’, rather than re-sitting the examination. In such cases the pass mark is 70% and a mark below 60% is considered a bad fail.

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 DEU, you will fail the stage
- 2) if you fail supplementary assessment in a non-DEU badly, you will fail the stage
- 3) 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).

7.21 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).

7.22 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

8 General Information

8.1 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

8.2 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

8.3 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.

8.4 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.

8.5 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

8.6 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

Guidance notes for students and academics undertaking research (www.bath.ac.uk/data-protection/guidance/academic-research)

8.7 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

9 Appendix A: Programme Structures and Assessment

Please note that the content of the programme description below is correct at the time of publication and that programmes and units may be subject to reasonable change (see the earlier section on [Unit and Programme Changes](#)). Current versions of unit and programme descriptions are available via the online Programme and Unit Catalogues: www.bath.ac.uk/catalogues/.

The following tables show which units are compulsory or optional for each of the Mathematics and Physics degree programmes offered by the Department:

Programme code	Programme title
USXX-AFB03	BSc (Hons) Mathematics and Physics
USXX-AKB04	BSc (Hons) Mathematics and Physics with Placement
USXX-AAB04	BSc (Hons) Mathematics and Physics with Study Year Abroad
USXX-AFM01	MSci (Hons) Mathematics and Physics
USXX-AKM01	MSci (Hons) Mathematics and Physics with Placement
USXX-AAM01	MSci (Hons) Mathematics and Physics with Study Year Abroad

The tables also show the assessment weightings and references for NFAAR-UG (New Framework for Assessment: Assessment Regulations) decisions for the different stages in these programmes. Please refer to Chapter 7 of this handbook for further explanation of NFAAR-UG, as well as definitions of the abbreviations in these tables.

Notes:

- Programmes and units may be changed in accordance with normal University procedures.
- The following tables are applicable for all years of study for the 2017/18 academic year only. Students continuing their studies into 2018/19 and beyond should not assume that these programmes, or their component units, will be delivered in future years in the format displayed here.
- NFAAR assessment regulations are subject to review and update. Links given here will provide access to the latest versions of NFAAR documentation. The regulations described in these tables may not necessarily be those which applied in previous academic years.
- Availability of units is subject to constraints such as staff availability, minimum and maximum group sizes, and timetabling factors as well as a student's ability to meet any pre-requisite rules.

9.1 BSc (Hons) Mathematics and Physics

Programme code	USXX-AFB03
Programme title	BSc Mathematics and Physics
Award type	Bachelor of Science with Honours
Mode of Attendance	Full time
Length	3 years
State if coexistent M-level programme	No
State any designated alternative programme(s)	USXX-AFM01 MSci Mathematics and Physics USPH-AFB01 BSc (Honours) Physics USMA-AFM13 BSc (Honours) Mathematics
Approving body and date of approval	Faculty of Science Teaching and Quality Committee (5 th March 2014)

Year 1								
Part	Stage	Normal period of study for this Mode		Unit code	Unit title	Unit status	Credits	Notes
1	1	Yr1	AY	MA10207	Analysis 1	C	12	
			S1	MA10209	Algebra 1A	C	6	
				MA10230	Methods & applications 1A	C	6	
				PH10052	Properties of matter [WL]	C	6	
				PH10053	Vibrations, waves & optics [WL]	C	6	
			S2	MA10210	Algebra 1B	C	6	
				MA10230	Methods & applications 1A	C	6	
				PH10048	Introduction to quantum physics [WL]	C	6	
				PH10051	Electricity & magnetism [WL]	C	6	

Year 2								
Part	Stage	Normal period of study for this Mode		Unit code	Unit title	Unit status	Credits	Notes
2	2	Yr2	S1	MA20216	Algebra 2A	C	6	
				MA20218	Analysis 2A	C	6	
				MA20220	ODEs & control	C	6	
				PH20013	Quantum & atomic physics	Optional: Select either 0 or 2 Units: Block A.	6	<i>Students should select either</i>
				PH20029	Thermal physics		6	

				PH20060	Quantum & atomic physics [WL]	Optional: Select either 0 or 2 Units: Block B.	6	<i>both units in block A or both units in block B.</i>
				PH20067	Thermal physics [WL]		6	
			S2	MA20219	Analysis 2B	C	6	
				MA20223	Vector calculus & PDEs	C	6	
				PH20018	Programming skills	C	6	
				PH20014	Electromagnetism 1	Optional: Select either 0 or 2 Units: Block C.	6	<i>Students should select either</i>
				PH20017	Condensed matter physics 1		6	
				PH20061	Electromagnetism 1 [WL]	Optional: Select either 0 or 2 Units: Block D.	6	<i>both units in block C or both units in block D.</i>
				PH20063	Condensed matter physics 1 [WL]		6	

Year 3								
Part	Stage	Normal period of study for this Mode		Unit code	Unit title	Unit status	Credits	Notes
3	3	Yr3	AY	PH30036	Final year project	O: Select 1 Unit	12	DEU
				PH30096	Industry Team Project		12	DEU
				PH30099	Communicating Physics Project		12	DEU
			S1	PH20076	Self-directed learning (M&P)	C	6	<i>Students must select 3 units from the combination of Blocks A, B and C taking at least one unit from both Block A and Block B.</i>
				MA30039	Differential geometry of curves and surfaces	Optional: Block A.	6	
				MA30044	Mathematical methods 1		6	
				MA30046	Linear control theory		6	
				MA30087	Optimisation methods of operational research		6	
				MA30252	Advanced real analysis		6	
				MA30253	Continuum mechanics		6	
				MA40254	Differential & geometric analysis		6	
				PH30024	Contemporary physics	Optional: Block B.	6	<i>Students may take no more than 6 credits of optional intermediate level units (e.g. with</i>
				PH30028	Condensed matter physics 2		6	
				PH30030	Quantum mechanics		6	
				PH30031	Simulation techniques		6	
				PH30032	Laser physics		6	
				PH30035	Medical physics		6	

		PH30055	Computational physics A		6	codes beginning PH2, MA2 etc) during this year of the programme.
		PH30101	General relativity		6	
		PH30109	Stars & stellar evolution		6	
		ZZ30001	Director of Studies approved unit	Optional: Block C.	6	
S2	MA20217	Algebra 2B	Optional: Block D	6	Students must select 24 credits from the combination of Blocks D, E and F, taking at least one unit from both Block D and Block E.	
	MA20221	Modelling and dynamical systems		6		
	MA30055	Introduction to topology		6		
	MA30059	Mathematical methods 2		6		
	MA30062	Ordinary differential equations		6		
	MA30128	Project		6		
	MA30231	Projective geometry		6		
	MA40049	Elasticity		6		
	MA40255	Viscous fluid dynamics		6		
	MA40256	Analysis in Hilbert spaces		6		
	PH30056	Computational physics B	Optional: Block E	6	Students may take no more than 6 credits of optional intermediate level units (e.g. with codes beginning PH2, MA2 etc) during this year of the programme.	
	PH30077	Electromagnetism 2		6		
	PH30078	Magnetism		3		
	PH30079	Superconductivity		3		
	PH30098	Networks		3		
	PH30111	Galaxies & introduction to cosmology				
	PH40073	Mathematical physics		6		
	PH40085	Nanoscience		6		
	PH40086	Photonics		6		
	ZZ30004	Director of Studies approved unit	Optional: Block F	6		

Assessment weightings and decision references		
Stage	Weighting within programme	NFAAR-UG decisions reference <i>See <u>NFAAR-UG</u> information at www.bath.ac.uk/registry/nfa</i>
Stage 1	0 %	Main assessment: Appendix 11 Supplementary assessment: Appendix 12
Stage 2	32 %	Main assessment: Appendix 11 Supplementary assessment: Appendix 12
Stage 3	68 %	Main assessment: Appendix 27 Supplementary assessment: Appendix 28

9.2 BSc (Hons) Mathematics and Physics with placement

Programme code	USXX-AKB04
Programme title	BSc Mathematics and Physics with placement
Award type	Bachelor of Science with Honours
Mode of Attendance	Thick sandwich
Length	4 Years
State if coexistent M-level programme	No
State any designated alternative programme(s)	USXX-AFM01 MSci Mathematics and Physics USPH-AFB01 BSc (Honours) Physics USMA-AFB13 BSc (Honours) Mathematics
Approving body and date of approval	Faculty of Science Teaching and Quality Committee (5 th March 2014)

Year 1								
Part	Stage	Normal period of study for this Mode		Unit code	Unit title	Unit status	Credits	Notes
1	1	Yr1	AY	MA10207	Analysis 1	C	12	
			S1	MA10209	Algebra 1A	C	6	
				MA10230	Methods & applications 1A	C	6	
				PH10052	Properties of matter [WL]	C	6	
				PH10053	Vibrations, waves & optics [WL]	C	6	
			S2	MA10210	Algebra 1B	C	6	
				MA10230	Methods & applications 1A	C	6	
				PH10048	Introduction to quantum physics [WL]	C	6	
				PH10051	Electricity & magnetism [WL]	C	6	

Year 2								
Part	Stage	Normal period of study for this Mode		Unit code	Unit title	Unit status	Credits	Notes
2	2	Yr2	S1	MA20216	Algebra 2A	C	6	
				MA20218	Analysis 2A	C	6	
				MA20220	ODEs & control	C	6	
				PH20013	Quantum & atomic physics	Optional: Select either 0 or 2 Units: Block A.	6	<i>Students should select either both</i>
				PH20029	Thermal physics		6	

		S2	PH20060	Quantum & atomic physics [WL]	Optional: Select either 0 or 2 Units: <i>Block B.</i>	6	<i>units in block A or both units in block B.</i>
			PH20067	Thermal physics [WL]		6	
			MA20219	Analysis 2B	C	6	
			MA20223	Vector calculus & PDEs	C	6	
			PH20018	Programming skills	C	6	
			PH20014	Electromagnetism 1	Optional: Select either 0 or 2 Units: <i>Block C.</i>	6	<i>Students should select either both units in block C or both units in block D.</i>
			PH20017	Condensed matter physics 1		6	
			PH20061	Electromagnetism 1 [WL]	Optional: Select either 0 or 2 Units: <i>Block D.</i>	6	
			PH20063	Condensed matter physics 1 [WL]		6	

Year 3							
Part	Stage	Normal period of study for this Mode		Unit code	Unit title	Unit status	Credits
2	3	Yr3	AY	PH20040	Professional placement	C	60

Year 4								
Part	Stage	Normal period of study for this Mode		Unit code	Unit title	Unit status	Credits	Notes
3	4	Yr4	AY	PH30036	Final year project	O: Select 1 Unit	12	DEU
				PH30096	Industry Team Project		12	DEU
				PH30099	Communicating Physics Project		12	DEU
			S1	PH20076	Self-directed learning (M&P)	C	6	<i>Students must select 3 units from the combination of Blocks A, B and C taking at least one unit from both Block A and Block B.</i>
				MA30039	Differential geometry of curves and surfaces	Optional: <i>Block A.</i>	6	
				MA30041	Metric spaces		6	
				MA30044	Mathematical methods 1		6	
				MA30046	Linear control theory		6	
				MA30087	Optimisation methods of operational research		6	
				MA40065	Viscous fluid mechanics		6	
				PH30024	Contemporary physics	Optional: <i>Block B.</i>	6	<i>Students may take no more than 6 credits of optional intermediate level units (e.g. with</i>
				PH30028	Condensed matter physics 2		6	
				PH30030	Quantum mechanics		6	
				PH30031	Simulation techniques		6	
				PH30032	Laser physics		6	
				PH30035	Medical physics		6	

				PH30055	Computational physics A		6	<i>codes beginning PH2, MA2 etc) during this year of the programme.</i>
				PH30101	General relativity		6	
				PH30109	Stars & stellar evolution		6	
				ZZ30001	Director of Studies approved unit	Optional: Block C.	6	
			S2	MA20217	Algebra 2B	Optional: Block D	6	<i>Students must select 24 credits from the combination of Blocks D, E and F, taking at least one unit from both Block D and Block E.</i>
				MA20221	Modelling and dynamical systems		6	
				MA30055	Introduction to topology		6	
				MA30056	Complex analysis		6	
				MA30059	Mathematical methods 2		6	
				MA30128	Project		6	
				MA30231	Projective geometry		6	
				MA40049	Elasticity		6	
				PH30056	Computational physics B	Optional: Block E	6	<i>Students may take no more than 6 credits of optional intermediate level units (e.g. with codes beginning PH2, MA2 etc) during this year of the programme.</i>
				PH30077	Electromagnetism 2		6	
				PH30078	Magnetism		3	
				PH30079	Superconductivity		3	
				PH30098	Networks		3	
				PH30111	Galaxies & introduction to cosmology			
				PH40073	Mathematical physics		6	
				PH40085	Nanoscience		6	
				PH40086	Photonics		6	
				ZZ30004	Director of Studies approved unit	Optional: Block F	6	

Assessment weightings and decision references		
Stage	Weighting within programme	NFAAR-UG decisions reference <i>See <u>NFAAR-UG</u> information at www.bath.ac.uk/registry/nfa</i>
Stage 1	0 %	Main assessment: Appendix 11 Supplementary assessment: Appendix 12
Stage 2	32 %	Main assessment: Appendix 11 Supplementary assessment: Appendix 12
Stage 3	0 %	Main assessment: Appendix 11 Supplementary assessment: Appendix 12
Stage 4	68 %	Main assessment: Appendix 27 Supplementary assessment: Appendix 28

9.3 BSc (Hons) Mathematics and Physics with study year abroad

Programme code	USXX-AAB04
Programme title	BSc Mathematics and Physics with year abroad
Award type	Bachelor of Science with Honours
Mode of Attendance	Full time
Length	4 Years
State if coexistent M-level programme	No
State any designated alternative programme(s)	USXX-AFM01 MSci Mathematics and Physics USPH-AFB01 BSc (Honours) Physics USMA-AFB13 BSc (Honours) Mathematics
Approving body and date of approval	Faculty of Science Teaching and Quality Committee (5 th March 2014)

Year 1								
Part	Stage	Normal period of study for this Mode		Unit code	Unit title	Unit status	Credits	Notes
1	1	Yr1	AY	MA10207	Analysis 1	C	12	
			S1	MA10209	Algebra 1A	C	6	
				MA10230	Methods & applications 1A	C	6	
				PH10052	Properties of matter [WL]	C	6	
				PH10053	Vibrations, waves & optics [WL]	C	6	
			S2	MA10210	Algebra 1B	C	6	
				MA10230	Methods & applications 1A	C	6	
				PH10048	Introduction to quantum physics [WL]	C	6	
				PH10051	Electricity & magnetism [WL]	C	6	

Year 2								
Part	Stage	Normal period of study for this Mode		Unit code	Unit title	Unit status	Credits	Notes
2	2	Yr2	S1	MA20216	Algebra 2A	C	6	
				MA20218	Analysis 2A	C	6	
				MA20220	ODEs & control	C	6	
				PH20013	Quantum & atomic physics	Optional: Select either 0 or 2 Units: Block A.	6	<i>Students should select either both</i>
				PH20029	Thermal physics		6	

				PH20060	Quantum & atomic physics [WL]	Optional: Select either 0 or 2 Units: <i>Block B.</i>	6	<i>units in block A or both units in block B.</i>
				PH20067	Thermal physics [WL]		6	
			S2	MA20219	Analysis 2B	C	6	
				MA20223	Vector calculus & PDEs	C	6	
				PH20018	Programming skills	C	6	
				PH20014	Electromagnetism 1	Optional: Select either 0 or 2 Units: <i>Block C.</i>	6	<i>Students should select either both units in block C or both units in block D.</i>
				PH20017	Condensed matter physics 1		6	
				PH20061	Electromagnetism 1 [WL]	Optional: Select either 0 or 2 Units: <i>Block D.</i>	6	
				PH20063	Condensed matter physics 1 [WL]		6	

Year 3							
Part	Stage	Normal period of study for this Mode		Unit code	Unit title	Unit status	Credits
2	3	Yr3	AY	PH20042	Study year abroad	C	60

Year 4								
Part	Stage	Normal period of study for this Mode		Unit code	Unit title	Unit status	Credits	Notes
3	4	Yr4	AY	PH30036	Final year project	O: Select 1 Unit	12	DEU
				PH30096	Industry Team Project		12	DEU
				PH30099	Communicating Physics Project		12	DEU
			S1	PH20076	Self-directed learning (M&P)	C	6	<i>Students must select 3 units from the combination of Blocks A, B and C taking at least one unit from both Block A and Block B.</i>
				MA30039	Differential geometry of curves and surfaces	Optional: <i>Block A.</i>	6	
				MA30041	Metric spaces		6	
				MA30044	Mathematical methods 1		6	
				MA30046	Linear control theory		6	
				MA30087	Optimisation methods of operational research		6	
				MA40065	Viscous fluid mechanics		6	
				PH30024	Contemporary physics	Optional: <i>Block B.</i>	6	<i>Students may take no more than 6 credits of optional intermediate level units (e.g. with</i>
				PH30028	Condensed matter physics 2		6	
				PH30030	Quantum mechanics		6	
				PH30031	Simulation techniques		6	
				PH30032	Laser physics		6	
				PH30035	Medical physics		6	

				PH30055	Computational physics A		6	<i>codes beginning PH2, MA2 etc) during this year of the programme.</i>
				PH30101	General relativity		6	
				PH30109	Stars & stellar evolution		6	
				ZZ30001	Director of Studies approved unit	Optional: Block C.	6	
			S2	MA20217	Algebra 2B	Optional: Block D	6	<i>Students must select 24 credits from the combination of Blocks D, E and F, taking at least one unit from both Block D and Block E.</i>
				MA20221	Modelling and dynamical systems		6	
				MA30055	Introduction to topology		6	
				MA30056	Complex analysis		6	
				MA30059	Mathematical methods 2		6	
				MA30128	Project		6	
				MA30231	Projective geometry		6	
				MA40049	Elasticity		6	
				PH30056	Computational physics B	Optional: Block E	6	<i>Students may take no more than 6 credits of optional intermediate level units (e.g. with codes beginning PH2, MA2 etc) during this year of the programme.</i>
				PH30077	Electromagnetism 2		6	
				PH30078	Magnetism		3	
				PH30079	Superconductivity		3	
				PH30098	Networks		3	
				PH30111	Galaxies & introduction to cosmology			
				PH40073	Mathematical physics		6	
				PH40085	Nanoscience		6	
				PH40086	Photonics		6	
				ZZ30004	Director of Studies approved unit	Optional: Block F	6	

Assessment weightings and decision references		
Stage	Weighting within programme	NFAAR-UG decisions reference <i>See <u>NFAAR-UG</u> information at www.bath.ac.uk/registry/nfa</i>
Stage 1	0 %	Main assessment: Appendix 11 Supplementary assessment: Appendix 12
Stage 2	32 %	Main assessment: Appendix 11 Supplementary assessment: Appendix 12
Stage 3	0 %	Main assessment: Appendix 11 Supplementary assessment: Appendix 12
Stage 4	68 %	Main assessment: Appendix 27 Supplementary assessment: Appendix 28

9.4 MSci (Hons) Mathematics and Physics

Programme code	USXX-AFM01
Programme title	MSci Mathematics and Physics
Award type	Master of Science with Honours
Mode of Attendance	Full time
Length	4 Years
State if coexistent M-level programme	Yes
State any designated alternative programme(s)	USXX-AFB03 BSc Mathematics and Physics USPH-AFM02 MPhys Physics USMA-AFM14 MMath Mathematics
Approving body and date of approval	Faculty of Science Teaching and Quality Committee (5 th March 2014)

Year 1								
Part	Stage	Normal period of study for this Mode		Unit code	Unit title	Unit status	Credits	Notes
1	1	Yr1	AY	MA10207	Analysis 1	C	12	
			S1	MA10209	Algebra 1A	C	6	
				MA10230	Methods & applications 1A	C	6	
				PH10052	Properties of matter [WL]	C	6	
				PH10053	Vibrations, waves & optics [WL]	C	6	
			S2	MA10210	Algebra 1B	C	6	
				MA10230	Methods & applications 1A	C	6	
				PH10048	Introduction to quantum physics [WL]	C	6	
				PH10051	Electricity & magnetism [WL]	C	6	

Year 2								
Part	Stage	Normal period of study for this Mode		Unit code	Unit title	Unit status	Credits	Notes
2	2	Yr2	S1	MA20216	Algebra 2A	C	6	
				MA20218	Analysis 2A	C	6	
				MA20220	ODEs & control	C	6	
				PH20013	Quantum & atomic physics	Optional: Select either 0 or 2 Units: Block A.	6	<i>Students should select either both</i>
				PH20029	Thermal physics		6	

				PH20060	Quantum & atomic physics [WL]	Optional: Select either 0 or 2 Units: <i>Block B.</i>	6	<i>units in block A or both units in block B.</i>
				PH20067	Thermal physics [WL]		6	
			S2	MA20219	Analysis 2B	C	6	
				MA20223	Vector calculus & PDEs	C	6	
				PH20018	Programming skills	C	6	
				PH20014	Electromagnetism 1	Optional: Select either 0 or 2 Units: <i>Block C.</i>	6	<i>Students should select either both units in block C or both units in block D.</i>
				PH20017	Condensed matter physics 1		6	
				PH20061	Electromagnetism 1 [WL]	Optional: Select either 0 or 2 Units: <i>Block D.</i>	6	
				PH20063	Condensed matter physics 1 [WL]		6	

Year 3									
Part	Stage	Normal period of study for this Mode		Unit code	Unit title	Unit status	Credits	DEU status	Notes
2	3	Yr3	AY	PH30096	Industry team project	O: Select 0 or 1 unit	12	DEU	<i>Students must select either (i) PH30096 or PH30099 OR (ii) 6 credits from Block A in S1, plus 6 credits from Block B in S2.</i>
				PH30099	Communicating Physics Project			DEU	
			S1	MA30252	Advanced real analysis	C	6		
				MA40044	Mathematical methods 1	C	6		
				PH20076	Self-directed learning	C	6		
				PH30031	Simulation techniques	C	6		
				PH30032	Laser physics	O: Block A	6		
				PH30035	Medical physics				
				PH30055	Computational physics A		6		
				PH30101	General relativity		6		
				PH30109	Stars & stellar evolution		6		
				ZZ30004	DoS approved unit		6		
			S2	MA40059	Mathematical methods 2	C	6		
				PH30056	Computational physics B	C	6		
				PH30077	Electromagnetism 2	C	6		
				PH40073	Mathematical physics	C	6		
				MA20217	Algebra 2B	O: Block B	6		<i>Students may not choose both MA20217 and MA20221.</i>
				MA20221	Modelling & dynamical systems		6		
				MA30055	Introduction to topology		6		
				MA30062	Ordinary differential equations		6		
				MA30231	Projective geometry		6		
			PH30078	Magnetism	3				
			PH30079	Superconductivity	3				

				PH30098	Networks		3		
				PH30111	Galaxies & introduction to cosmology		6		
				ZZ30004	DoS approved unit		6		

Year 4									
Part	Stage	Normal period of study for this Mode		Unit code	Unit title	Unit status	Credits	DEU status	
3	4	Yr4	AY	PH40065	Final year project (MSci)	C	18	DEU	
			S1	MA40065	Viscous fluid mechanics	C	6		
				PH30030	Quantum mechanics	C	6		
				MA30039	Differential geometry of curves & surfaces	Optional: Select 6 credits.	6		
				MA30046	Linear control theory		6		
				MA30087	Optimisation methods of operational research		6		
				MA30237	Group theory		6		
				MA40040	Algebraic topology		6		
				MA40042	Measure theory & integration		6		
				MA40254	Differential & geometric analysis		6		
				PH30024	Contemporary physics		6		
				PH30028	Condensed matter physics 2		6		
				ZZ30001	Director of Studies approved unit		6		
			S2	MA40049	Elasticity	C	6		
				PH40084	Advanced quantum theory	C	6		
				MA40054	Representation theory of finite groups	Optional: Select 12 credits	6		
				MA40203	Theory of partial differential equations				
				PH40085	Nanoscience		6		
				PH40086	Photonics		6		

Assessment weightings and decision references		
Stage	Weighting within programme	NFAAR-UG decisions reference <i>See <u>NFAAR-UG</u> information at www.bath.ac.uk/registry/nfa</i>
Stage 1	0 %	Main assessment: Appendix 15 Supplementary assessment: Appendix 16
Stage 2	16 %	Main assessment: Appendix 23 Supplementary assessment: Appendix 24
Stage 3	34 %	Main assessment: Appendix 23 Supplementary assessment: Appendix 24
Stage 4	50 %	Main assessment: Appendix 27 Supplementary assessment: Appendix 28

9.5 MSci (Hons) Mathematics and Physics with placement

Programme code	USXX-AKM01
Programme title	MSci Mathematics and Physics with Placement
Award type	Master of Science with Honours
Mode of Attendance	Thick Sandwich
Length	5 Years
State if coexistent M-level programme	Yes
State any designated alternative programme(s)	USXX-AFB03 BSc Mathematics and Physics USPH-AFM02 MPhys Physics USMA-AFM14 MMath Mathematics
Approving body and date of approval	Faculty of Science Teaching and Quality Committee (5 th March 2014)

Year 1								
Part	Stage	Normal period of study for this Mode		Unit code	Unit title	Unit status	Credits	Notes
1	1	Yr1	AY	MA10207	Analysis 1	C	12	
			S1	MA10209	Algebra 1A	C	6	
				MA10230	Methods & applications 1A	C	6	
				PH10052	Properties of matter [WL]	C	6	
				PH10053	Vibrations, waves & optics [WL]	C	6	
			S2	MA10210	Algebra 1B	C	6	
				MA10230	Methods & applications 1A	C	6	
				PH10048	Introduction to quantum physics [WL]	C	6	
				PH10051	Electricity & magnetism [WL]	C	6	

Year 2								
Part	Stage	Normal period of study for this Mode		Unit code	Unit title	Unit status	Credits	Notes
2	2	Yr2	S1	MA20216	Algebra 2A	C	6	
				MA20218	Analysis 2A	C	6	
				MA20220	ODEs & control	C	6	
				PH20013	Quantum & atomic physics	Optional: Select either 0 or 2 Units: Block A.	6	<i>Students should select either both</i>
				PH20029	Thermal physics		6	

			S2	PH20060	Quantum & atomic physics [WL]	Optional: Select either 0 or 2 Units: <i>Block B.</i>	6	<i>units in block A or both units in block B.</i>
				PH20067	Thermal physics [WL]		6	
				MA20219	Analysis 2B	C	6	
				MA20223	Vector calculus & PDEs	C	6	
				PH20018	Programming skills	C	6	
				PH20014	Electromagnetism 1	Optional: Select either 0 or 2 Units: <i>Block C.</i>	6	<i>Students should select either both units in block C or both units in block D.</i>
				PH20017	Condensed matter physics 1		6	
				PH20061	Electromagnetism 1 [WL]	Optional: Select either 0 or 2 Units: <i>Block D.</i>	6	
				PH20063	Condensed matter physics 1 [WL]		6	

Year 3							
Part	Stage	Normal period of study for this Mode		Unit code	Unit title	Unit status	Credits
2	3	Yr3	AY	PH20040	Professional placement	C	60

Year 4									
Part	Stage	Normal period of study for this Mode		Unit code	Unit title	Unit status	Credits	DEU status	Notes
2	4	Yr4	AY	PH30096	Industry team project	O: Select 0 or 1 unit	12	DEU	<i>Students must select either (i) PH30096 or PH30099 OR (ii) 6 credits from Block A in S1, plus 6 credits from Block B in S2.</i>
				PH30099	Communicating Physics Project			DEU	
		S1		MA30041	Metric spaces	C	6		
				MA40044	Mathematical methods 1	C	6		
				MA40065	Viscous fluid dynamics	C	6		
				PH20076	Self-directed learning	C	6		
				PH30032	Laser physics	O: Block A	6		
				PH30035	Medical physics		6		
				PH30055	Computational physics A		6		
				PH30101	General relativity		6		
				PH30109	Stars & stellar evolution		6		
				ZZ30004	DoS approved unit		6		
		S2		MA40059	Mathematical methods 2	C	6		
				PH30056	Computational physics B	C	6		
				PH30077	Electromagnetism 2	C	6		
				PH40073	Mathematical physics	C	6		

				MA20217	Algebra 2B	O: Block B	6		<i>Students may not choose both MA20217 and MA20221.</i>
				MA20221	Modelling & dynamical systems		6		
				MA30055	Introduction to topology		6		
				MA30056	Complex analysis		6		
				MA30231	Projective geometry		6		
				PH30078	Magnetism		3		
				PH30079	Superconductivity		3		
				PH30098	Networks		3		
				PH30111	Galaxies & introduction to cosmology		6		
				ZZ30004	DoS approved unit		6		

Year 5								
Part	Stage	Normal period of study for this Mode		Unit code	Unit title	Unit status	Credits	DEU status
3	5	Yr5	AY	PH40065	Final year project (MSci)	C	18	DEU
			S1	MA40065	Viscous fluid mechanics	C	6	
				PH30030	Quantum mechanics	C	6	
				MA30039	Differential geometry of curves & surfaces	Optional: Select 6 credits.	6	
				MA30046	Linear control theory		6	
				MA30087	Optimisation methods of operational research		6	
				MA30237	Group theory		6	
				MA40040	Algebraic topology		6	
				MA40042	Measure theory & integration		6	
				MA40254	Differential & geometric analysis		6	
				PH30024	Contemporary physics		6	
				PH30028	Condensed matter physics 2		6	
				ZZ30001	Director of Studies approved unit		6	
			S2	MA40049	Elasticity	C	6	
				PH40084	Advanced quantum theory	C	6	
				MA40054	Representation theory of finite groups	Optional: Select 12 credits	6	
				MA40203	Theory of partial differential equations			
				PH40085	Nanoscience		6	
				PH40086	Photonics		6	

Assessment weightings and decision references		
Stage	Weighting within programme	NFAAR-UG decisions reference <i>See <u>NFAAR-UG</u> information at www.bath.ac.uk/registry/nfa</i>
Stage 1	0 %	Main assessment: Appendix 15 Supplementary assessment: Appendix 16
Stage 2	16 %	Main assessment: Appendix 23 Supplementary assessment: Appendix 24
Stage 3	0%	Main assessment: Appendix 15 Supplementary assessment: Appendix 16
Stage 4	34 %	Main assessment: Appendix 23 Supplementary assessment: Appendix 24
Stage 5	50 %	Main assessment: Appendix 27 Supplementary assessment: Appendix 28

9.6 MSci (Hons) Mathematics and Physics with year abroad

Programme code	USXX-AAM01
Programme title	MSci Mathematics and Physics with Study Year Abroad
Award type	Master of Science with Honours
Mode of Attendance	Thick Sandwich
Length	5 Years
State if coexistent M-level programme	Yes
State any designated alternative programme(s)	USXX-AFB03 BSc Mathematics and Physics USPH-AFM02 MPhys Physics USMA-AFM14 MMath Mathematics
Approving body and date of approval	Faculty of Science Teaching and Quality Committee (5 th March 2014)

Year 1								
Part	Stage	Normal period of study for this Mode		Unit code	Unit title	Unit status	Credits	Notes
1	1	Yr1	AY	MA10207	Analysis 1	C	12	
			S1	MA10209	Algebra 1A	C	6	
				MA10230	Methods & applications 1A	C	6	
				PH10052	Properties of matter [WL]	C	6	
				PH10053	Vibrations, waves & optics [WL]	C	6	
			S2	MA10210	Algebra 1B	C	6	
				MA10230	Methods & applications 1A	C	6	
				PH10048	Introduction to quantum physics [WL]	C	6	
				PH10051	Electricity & magnetism [WL]	C	6	

Year 2								
Part	Stage	Normal period of study for this Mode		Unit code	Unit title	Unit status	Credits	Notes
2	2	Yr2	S1	MA20216	Algebra 2A	C	6	
				MA20218	Analysis 2A	C	6	
				MA20220	ODEs & control	C	6	
				PH20013	Quantum & atomic physics	Optional: Select either 0 or 2 Units: Block A.	6	<i>Students should select either both</i>
				PH20029	Thermal physics		6	

			S2	PH20060	Quantum & atomic physics [WL]	Optional: Select either 0 or 2 Units: <i>Block B.</i>	6	<i>units in block A or both units in block B.</i>
				PH20067	Thermal physics [WL]		6	
				MA20219	Analysis 2B	C	6	
				MA20223	Vector calculus & PDEs	C	6	
				PH20018	Programming skills	C	6	
				PH20014	Electromagnetism 1	Optional: Select either 0 or 2 Units: <i>Block C.</i>	6	<i>Students should select either both units in block C or both units in block D.</i>
				PH20017	Condensed matter physics 1		6	
				PH20061	Electromagnetism 1 [WL]	Optional: Select either 0 or 2 Units: <i>Block D.</i>	6	
				PH20063	Condensed matter physics 1 [WL]		6	

Year 3							
Part	Stage	Normal period of study for this Mode		Unit code	Unit title	Unit status	Credits
2	3	Yr3	AY	PH20042	Study year abroad	C	60

Year 4									
Part	Stage	Normal period of study for this Mode		Unit code	Unit title	Unit status	Credits	DEU status	Notes
2	4	Yr4	AY	PH30096	Industry team project	O: Select 0 or 1 unit	12	DEU	<i>Students must select either (i) PH30096 or PH30099 OR (ii) 6 credits from Block A in S1, plus 6 credits from Block B in S2.</i>
				PH30099	Communicating Physics Project			DEU	
		S1		MA30041	Metric spaces	C	6		
				MA40044	Mathematical methods 1	C	6		
				MA40065	Viscous fluid dynamics	C	6		
				PH20076	Self-directed learning	C	6		
				PH30032	Laser physics	O: Block A	6		
				PH30035	Medical physics		6		
				PH30055	Computational physics A		6		
				PH30101	General relativity		6		
				PH30109	Stars & stellar evolution		6		
				ZZ30004	DoS approved unit		6		
		S2		MA40059	Mathematical methods 2	C	6		
				PH30056	Computational physics B	C	6		
				PH30077	Electromagnetism 2	C	6		
				PH40073	Mathematical physics	C	6		

				MA20217	Algebra 2B	O: Block B	6		<i>Students may not choose both MA20217 and MA20221.</i>
				MA20221	Modelling & dynamical systems		6		
				MA30055	Introduction to topology		6		
				MA30056	Complex analysis		6		
				MA30231	Projective geometry		6		
				PH30078	Magnetism		3		
				PH30079	Superconductivity		3		
				PH30098	Networks		3		
				PH30111	Galaxies & introduction to cosmology		6		
				ZZ30004	DoS approved unit		6		

Year 5								
Part	Stage	Normal period of study for this Mode		Unit code	Unit title	Unit status	Credits	DEU status
3	5	Yr5	AY	PH40065	Final year project (MSci)	C	18	DEU
			S1	MA40065	Viscous fluid mechanics	C	6	
				PH30030	Quantum mechanics	C	6	
				MA30039	Differential geometry of curves & surfaces	Optional: Select 6 credits.	6	
				MA30046	Linear control theory		6	
				MA30087	Optimisation methods of operational research		6	
				MA30237	Group theory		6	
				MA40040	Algebraic topology		6	
				MA40042	Measure theory & integration		6	
				MA40254	Differential & geometric analysis		6	
				PH30024	Contemporary physics		6	
				PH30028	Condensed matter physics 2		6	
				ZZ30001	Director of Studies approved unit		6	
			S2	MA40049	Elasticity	C	6	
				PH40084	Advanced quantum theory	C	6	
				MA40054	Representation theory of finite groups	Optional: Select 12 credits	6	
				MA40203	Theory of partial differential equations			
				PH40085	Nanoscience		6	
				PH40086	Photonics		6	

Assessment weightings and decision references		
Stage	Weighting within programme	NFAAR-UG decisions reference <i>See <u>NFAAR-UG</u> information at www.bath.ac.uk/registry/nfa</i>
Stage 1	0 %	Main assessment: Appendix 15 Supplementary assessment: Appendix 16
Stage 2	16 %	Main assessment: Appendix 23 Supplementary assessment: Appendix 24
Stage 3	0%	Main assessment: Appendix 15 Supplementary assessment: Appendix 16
Stage 4	34 %	Main assessment: Appendix 23 Supplementary assessment: Appendix 24
Stage 5	50 %	Main assessment: Appendix 27 Supplementary assessment: Appendix 28

Further information:

Section in this Handbook on **Assessment**.

Definitions of assessment terms: www.bath.ac.uk/registry/nfa/nfaar-ug-appendix-02.pdf

10 Appendix B: Unit and Programme Catalogue

The online Unit and Programme Catalogues provide details of the structure of taught programmes offered by the University and of the content of their component units, for the current academic year and for previous years. Please see the website for dates when the Catalogue for the next academic year will be available online. The Catalogues also provide links to the University's assessment regulations, showing how these are applied to programmes of study.

Unit and Programme Catalogues: www.bath.ac.uk/catalogues

11 Appendix C: Assessment of Non-standard Units

11.1 PH20018: Programming Skills

There are two elements to the assessment of this unit:

- | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| • Examination | 60% |
| • Assessed work: two pieces of coursework, testing: (i) comprehension of the C language, and (ii) ability to use numerical methods to solve problems in physics. | 40% |

11.2 PH20040: BSc Placement

Assessment of this unit is based on the following three assessment tasks:

1. Satisfactory completion of a personal development programme during the placement year structured around the Personal Objectives and Learning Outcomes (POLO) forms and Goals, Objectives and Learning Forms (GOLF).
2. A poster presentation given by the student at the Faculty of Science Professional Placement Poster Afternoon;
3. A report written by the student at the end of the placement on the work carried out during the year.

Through these three tasks students will be expected to demonstrate development leading to competence in the following areas:

- Managing themselves;
- Managing tasks;
- Communicating effectively;
- Teamwork;
- Applying knowledge;
- Using initiative.

Satisfactory overall performance is required across all three tasks for the student to pass the unit.

11.3 PH20042: BSc Year Abroad

Assessment of this unit is based on the following three assessment tasks:

1. An poster presentation given by the student;
2. A short report from the student on his/her experiences;
3. A transcript for the year from the host university, indicating satisfactory performance.

Satisfactory overall performance is required across all three tasks for the student to pass the unit.

11.4 PH30024: Contemporary Physics

This unit is based around three seminars from speakers who will introduce topics of current research in Physics. Students research and write technical reports on each of these topics, with the lecturers holding technical surgeries to answer any questions students may have. Each report is assessed by the lecturer concerned according to a set marking scheme, with marks for both scientific content and quality of writing and presentation. Each report is weighted equally.

11.5 PH30036: Final Year Project

In this unit students work (usually in pairs) on an extended project which spans both semesters. Each project has a supervisor, and an assessor is appointed for each student early in semester 1.

Students give an oral presentation on their project to their assessor around week 11 of semester 1; this presentation forms 10% of the mark for the project unit.

Students write an extended report on their project towards the end of the second semester which is marked independently by the supervisor and assessor. There is also a 30 minute oral examination attended by the student, assessor and a chair. The assessor usually has the leading role in questioning students during the oral examination. The supervisor and assessor award marks for the project in the following way:

		Mark out of
Project Supervisor	General performance of the project	50
	Report	50
		100
Project Assessor	Report	50
	Student's performance at viva	50
		100

The moderation of marks occurs after the viva, led by the chair. The result will be an overall mark for the project, which normally falls between the marks of the supervisor and assessor. This mark will then be scaled to produce 90% of the unit mark, and combined with the mark gained from the presentation at the end of semester 1, in order to produce the overall mark for unit PH30036.

11.6 PH30096: Industry Team Project

Industry team projects are carried out in teams of 4-6 students in response to real-life scientific problems posed by an industrial client. Students apply their knowledge of physics and mathematics to the tackling of these problems, which involve experimental investigation or modelling of an application of physics or mathematics.

The students are acquainted with the project brief by their industrial supervisor, and work on the project under the facilitation of an academic supervisor. An assessor is appointed for each project early in semester 1.

Students write an individual report on their project towards the end of the second semester, and this is marked independently by the academic supervisor and assessor. There are also two oral presentations given by the whole team; one around the end of semester 1, and another at the end of the semester 2 assessment period. Each team also provides an executive summary of the project outcomes to the industrial supervisor.

The unit is assessed as follows:

	Marked by	%
General performance	Academic supervisor	25
Mid-term oral presentation	Assessor	10
Final oral presentation	Assessor	15
Individual project report	Academic supervisor	25
Individual project report	Assessor	25

In assigning the general performance mark, the academic supervisor will take into account feedback received from the industrial supervisor on the overall team/student performance, performance in the oral presentations, and the executive summary.