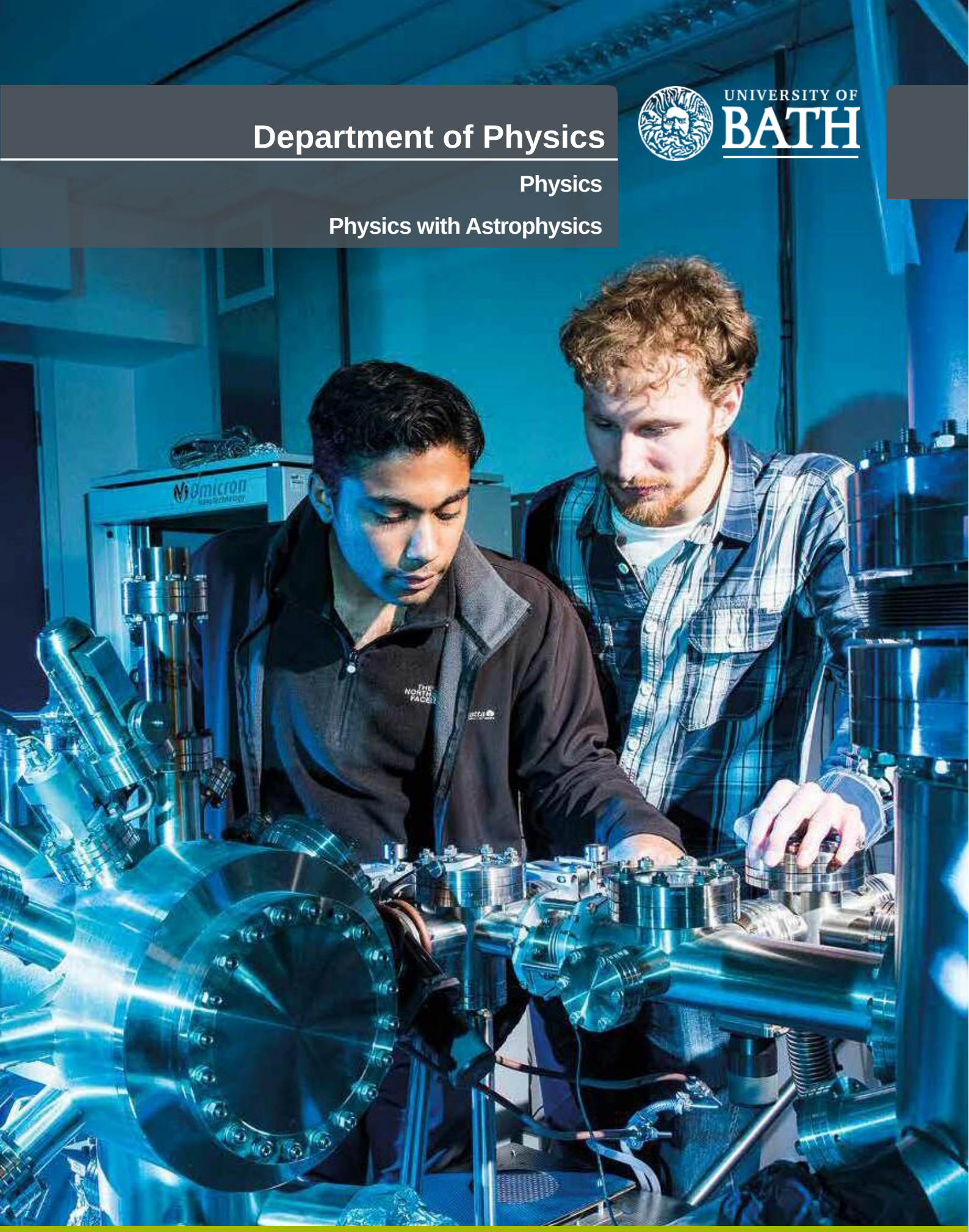
Department of Physics

UNIVERSITY OF BATH

Physics

Physics with Astrophysics



Undergraduate Programme Handbook 2020/21

CONTENTS

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 2020/2021:

- BSc (Hons) Physics;
- BSc (Hons) Physics with Astrophysics;
- MPhys (Hons) Physics;
- MPhys (Hons) Physics with Astrophysics.

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

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

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

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

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

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

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

If in doubt about what applies to you, or if your circumstances change, please contact your Director of Studies for advice.

IMPORTANT LINKS AND INFORMATION

UNIVERSITY INFORMATION ONLINE

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

If you cannot find the information you are looking for in this Handbook or on the web please contact your Director of Studies in the first instance.

SUPPORTING YOU

Student Support Services
https://www.bath.ac.uk/professional-services/student-services/

SU Advice and Support Service
www.thesubath.com/advice

Equality, Diversity and Inclusion
https://www.bath.ac.uk/professional-services/equality-diversity-and-inclusion/

Advice for specific groups of students:
International students
www.bath.ac.uk/topics/visas
www.bath.ac.uk/guides/student-immigration-appointments-and-drop-in-sessions
www.bath.ac.uk/campaigns/studying-at-bath-as-an-erasmus-exchange-or-visiting-student
www.bath.ac.uk/guides/academic-engagement-monitoring-for-tier-4-students
Care-leavers
https://www.bath.ac.uk/publications/university-and-leaving-care/
Estranged students
https://www.bath.ac.uk/publications/university-and-estranged-students/
Refugees
https://www.bath.ac.uk/publications/university-and-refugees/
Students with caring responsibilities
https://www.bath.ac.uk/publications/university-and-young-adult-carers/

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

CORE UNIVERSITY SERVICES / INFORMATION

Dissatisfaction with a University service or facility (Complaints)
www.bath.ac.uk/guides/student-complaints-policy-and-procedure

Health and Safety
www.bath/ac/uk/guides/student-health-and-safety
Be Safe on Campus information (COVID-19)
https://www.bath.ac.uk/campaigns/be-safe-on-campus-and-in-bath-during-the-covid-19-pandemic/

Library and Study Spaces
https://library.bath.ac.uk/home
www.bath.ac.uk/campaigns/where-you-can-study-on-campus-and-in-the-city

Skills Support and Development
http://go.bath.ac.uk/my-skills
www.bath.ac.uk/campaigns/get-ahead-with-skills-at-bath

Learning Technologies & IT Support
https://www.bath.ac.uk/professional-services/digital-data-and-technology/

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

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

Bullying, harassment and victimisation
https://www.bath.ac.uk/campaigns/report-and-

Disabilities, long-term illness, and specific learning difficulties
http://go.bath.ac.uk/disability-service

SUPPORTING YOUR LEARNING

Your Learning
www.bath.ac.uk/guides/your-learning
Bath Blend
Glossary
Year Dates and Timetables

Regulations for students
http://go.bath.ac.uk/regulations

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

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

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

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

Units and Programmes
www.bath.ac.uk/guides/about-units-and-programmes
Catalogues
Option choices
How your programme is reviewed and monitored

Student Representation and Engagement
www.bath.ac.uk/campaigns/student-engagement-shape-your-university

support/

SU Code of Practice and membership
www.bath.ac.uk/corporate-information/code-of-practice-for-the-students-union-su

Assessment
www.bath.ac.uk/guides/assessment-guidance-for-students
Assessment processes
Understanding your results
External examiners
Supplementary assessment

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

Assessment Regulations
www.bath.ac.uk/corporate-information/new-framework-for-assessment
Definitions of assessment terms

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

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

DEPARTMENT WELCOME 2020/21

Welcome to the 2020 - 2021 academic session in the Department of Physics!

This handbook provides a comprehensive overview of the Physics and Physics with Astrophysics undergraduate degree programmes offered by the Department of Physics. It contains the key information you will need as a student within the Department, so please familiarise yourself with its contents and save this URL in your favourites list, 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.

Best wishes for a successful and enjoyable year with us!

Dr Frances Laughton
Director of Teaching
September 2020

KEY CONTACTS

In the following pages a number of job titles are referred to; for the 2020-2021 academic year the people who have responsibility for these positions are:

Role	Name
Head of Department	Dr Richard James
Director of Teaching & Chair of Department Learning, Teaching & Quality Committee	Dr Frances Laughton
Director of Studies for Years 1 & 2 Physics	Dr Steven Andrews
Director of Studies for Years 3-5 Physics	Dr Andriy Gorbach
Director of Studies for Maths & Physics	Dr Alessandro Narduzzo
Senior Tutor	Dr Gary Mathlin
Placement Tutor	Dr Steven Davies
Faculty of Science Placements Manager	Ms Louise Oliver
Study Year Abroad Tutor	Dr Andriy Gorbach
Departmental Library Liaison Rep	Dr Frances Laughton
Students' Union Liaison Officer	Dr Frances Laughton
Programmes Administrator phys-prog-admin@bath.ac.uk	Mrs Santina Kennedy
Programmes Administrator Assistant phys-prog-admin@bath.ac.uk	Ms Eleni Galanti

STAFF LIST

Name	Role	Tel. ext.	Room	Email prefix (@bath.ac.uk)
Santina Kennedy & Eleni Galanti	Taught Programme Administrators			phys-prog-admin
Dr Steve Andrews	Senior Lecturer & Director of Studies (Years 1 & 2 Physics)	6651	3W 5.9	pyssra
Prof Simon Bending	Professor	5173	3W 3.6	pyssb
Prof David Bird	Professor	3383	3W 3.11A	pysdb
Prof Tim Birks	Professor	4711	3W 3.17B	pystab
Dr Philippe Blondel	Senior Lecturer	5237	WH 3.46	pyspb
Dr Simon Crampin	Senior Lecturer	4808	WH 3.41	pyssc
Dr Enrico Da Como	Reader	4368	WH 3.40	edc25
Dr Steven Davies	Senior Lecturer & Placement Tutor	6472	3W 4.20	pyssrd
Dr Hendrik van Eerten	Senior Lecturer	3193	WH 3.48	hjve20
Dr Andriy Gorbach	Senior Lecturer, Director of Studies (Years 3 & 4 Physics) & Study Year Abroad Tutor	6307	3W 3.03A	ag263
Dr Adelina Ilie	Reader	6898	3W 4.16	ai213
Dr Richard James	Head of Department	5467	3W 2.02D	pysrj
Dr Frances Laughton	Senior Lecturer & Director of Teaching	4361	3W 3.16	pysfrl
Dr Gary Mathlin	Senior Lecturer & Senior Tutor	6441	3S 1.02	pysgm
Mr Joe Mills	Teaching & Research Support Technician (electronics)		3W 3.19B	jm2988
Dr Peter Mosley	Senior Lecturer & Admissions Tutor	4567	3W 4.05C	pjm36
Dr Marcin Mucha-Kruczynski	Senior Lecturer	5543	3W 5.03	mlmk20
Dr Alessandro Narduzzo	Lecturer & Director of Studies (Maths & Physics)	3324	3W 3.11	an270
Prof Alain Nogaret	Professor & Director of Research	5609	3W 4.19	pysarn
Dr Josh Nunn	Reader	5207	3W 4.02	jasn21
Dr Emma Osborne	Ogden Outreach Fellow	5409	3W 3.01	elo28
Dr Ville Rimpiläinen	Lecturer	6797	1W 1.05	vjtr20

Prof Philip Salmon	Professor	3698	3W 5.01	pyspss
Dr Patricia Schady	Lecturer & Admissions Tutor	4164	3W 2.02C	ps2018
Dr Victoria Scowcroft	Lecturer	3132	3W 2.02E	vs522
Dr Chris Shearwood	Senior Teaching Support Technician	6169	3W 3.23	cs2360
Prof Dmitry Skryabin	Professor	5874	3W 3.15	pysdvs
Dr Peter Sloan	Senior Lecturer	4566	3W 4.05B	ps436
Dr Paul Snow	Senior Lecturer	6897	3W 4.05A	pyspas
Dr Anton Souslov	Lecturer	4340	3W 2.07A	as3764
Dr Kei Takashina	Senior Lecturer	5395	3W 5.02	kt264
Dr David Tsang	Lecturer	4539	3W 2.02A	dcwt21
Dr Carolin Villforth	Lecturer	5420	WH 3.49	cv307
Prof William Wadsworth	Professor & Deputy Head of Department	6946	3W 3.14	pyswjw
Prof Alison Walker	Professor	3322	3W 3.05	pysabw
Ms Isabel Wells	Department Support Technician	5369	3W 3.19	irw26
Dr Jennifer Williams	Technical supervisor	5369	3W 3.19	jw2136
Dr Daniel Wolverson	Reader	3321	3W 2.04	pysdw
Dr Stijn Wuyts	Reader	4598	WH 3.51	sw2122
Dr Anita Zeidler	Lecturer	6645	3W 3.03B	az207

ABOUT YOUR PROGRAMME

The Department of Physics offers undergraduate degree programmes which lead to the qualification of Master of Physics (MPhys) or Bachelor of Science (BSc). There are a number of options for our MPhys degrees; students may choose between a four-year full-time programme, four-year programmes which include a research placement or study year abroad, or five-year programmes which also include a professional placement year. BSc degrees have similar options, with a three-year full-time programme, or four-year programmes with a professional 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 Section 3. The Department also offers, jointly with the Department of Mathematical Sciences, degrees in Mathematics and Physics. Further details on all of our programmes are at http://www.bath.ac.uk/catalogues/2020-2021/ph/ph-proglist-ug.html.

We aim to cultivate physicists who combine a high level of numeracy with the ability to apply their skills and experience. We aim to develop in our students the ability to think clearly and logically, and to be enquiring, open minded, imaginative and creative.

Our programmes are designed to develop students' awareness of the role of physics in contemporary applications, together with the skills of logical thought and a flexibility of mind that will help them continue their personal development throughout their subsequent career. It is not expected that all graduates will necessarily choose a career within mainstream physics, but we aim that all will leave with a good understanding of the fundamentals of the discipline, good mathematical, practical and computing skills, and an ability to develop and adapt their knowledge and skills to unfamiliar situations and new challenges.

Our degree programmes are fully compliant with the QAA's (Quality Assurance Agency for Higher Education) subject benchmark statement for Physics, Astronomy and Astrophysics (https://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/subject-benchmark-statement-physics-astronomy-and-astrophysics.pdf). This framework prescribes Physics graduates' expected level of achievement and knowledge; for example, the "M level" outcomes expected of an MPhys graduate, and the "H level" outcomes expected of someone receiving a BSc degree. All Physics and Physics with Astrophysics programmes share a common first two years, which covers core material in physics (theory and practical), mathematics and computing.

PROGRAMME AIMS AND LEARNING OUTCOMES

BSc Physics, BSc Physics with study year abroad and BSc Physics with professional placement

For the BSc Physics programmes, the aims are:

- to offer a stimulating and supportive environment which encourages students to be critically receptive to new ideas and to attain their full academic potential;
- to provide students with a sound base of knowledge and understanding in physics, and to expose students to the applications of physical principles in various branches of physics;
- to train students to analyse and solve problems in physics using a range of mathematical techniques;
- to develop in students the ability to carry out experimental or other investigations, to analyse their results critically, draw valid conclusions, and communicate their findings both verbally and in writing;
- to provide the foundations and transferable skills (such as problem-solving, investigative, oral and written communication, analytical, IT and personal skills) essential for further training and for the development of skills and knowledge in students' future careers or study, whether within mainstream physics or in another discipline or vocation.

The programme learning outcomes are:

Knowledge and understanding	• general and fundamental concepts, principles, theories and results of physics • the role of mathematics in describing the physical world, and the particular mathematical principles and techniques underpinning point 1 above • the application of fundamental physical laws and principles within

	major areas of physics
Intellectual skills	• analyse and solve a variety of problems in physics by means of the appropriate application of physical principles and mathematical techniques • formulate theoretical and practical physics problems in precise terms, and identify key issues and relevant principles and laws • analyse results of experimental investigations, compare data with theoretical predictions and previously published data, propose plausible explanations for observations, and determine the strength and validity of both numerical results and hypotheses • demonstrate an appreciation of the role of numerical modelling, uncertainty and approximation in physics • critically evaluate arguments, assumptions, abstract concepts and data (that may be incomplete), make judgements, and frame appropriate questions to achieve a solution or identify a range of solutions to a problem.
Professional practice skills	• execute physics experiments safely and use basic laboratory apparatus and techniques effectively to generate data • produce clear and accurate scientific reports, and prepare and give technical presentations • make appropriate and effective use of scientific literature, such as textbooks and refereed research articles • write computer programs, and use computational tools and packages effectively for making calculations and for acquiring, analysing, and presenting information.
Transferrable skills	• demonstrate effective problem-solving skills in both theoretical and practical contexts • work independently in an effective manner, manage his or her own learning and show self-reliance and personal responsibility • participate effectively and constructively in groups; • retrieve, synthesise and evaluate information and data from a variety of sources • demonstrate good oral and written communication skills • manage time, prioritise workloads and work to deadlines; • evaluate and assess his or her own abilities, performance and understanding, reflect on his or her own learning and seek advice and feedback. In the case of students whose degree programme incorporates a professional placement, they should also be able to: • demonstrate an understanding of the general structure of their employing organisation, and of the particular significance of the work that they have undertaken; • apply knowledge and skills gained at the university to a work programme in a professional context; • demonstrate enhanced professional and practical skills commensurate with the placement project undertaken; • demonstrate enhanced personal skills in the following areas: communication, both oral and written, planning, time management, appraisal of new information, problem solving, decision making,

	relating to others and working as part of a team. In the case of students whose degree programme incorporates a study year abroad, they should also be able to: • work effectively in a culture different from that of the UK and operate at a scientific level in the language of the country concerned; • demonstrate increased self-confidence and maturity through living in a new environment and culture.

BSc Physics with Astrophysics, BSc Physics with Astrophysics with study year abroad and BSc Physics with Astrophysics with professional placement

For the BSc Physics with Astrophysics programmes, the aims are:

- to offer a stimulating and supportive environment which encourages students to be critically receptive to new ideas and to attain their full academic potential;
- to provide students with a sound base of knowledge and understanding in physics, and to expose students to the applications of physical principles in various branches of physics, particularly astronomy and astrophysics;
- to train students to analyse and solve problems in physics (including astronomy and astrophysics) using a range of mathematical techniques;
- to develop in students the ability to carry out experimental or other investigations, to analyse their results critically, draw valid conclusions, and communicate their findings both verbally and in writing;
- to provide the foundations and transferable skills (such as problem-solving, investigative, oral and written communication, analytical, IT and personal skills) essential for further training and for the development of skills and knowledge in students' future careers or study, whether within mainstream physics or in another discipline or vocation.

The programme learning outcomes are:

Knowledge and understanding	• general and fundamental concepts, principles, theories and results of physics • the role of mathematics in describing the physical world, and the particular mathematical principles and techniques underpinning point 1 above • the application of fundamental physical laws and principles within major areas of physics, particularly astronomy and astrophysics
Intellectual skills	• analyse and solve a variety of problems in physics by means of the appropriate application of physical principles and mathematical techniques • formulate theoretical and practical physics problems in precise terms, and identify key issues and relevant principles and laws • analyse results of experimental investigations, compare data with theoretical predictions and previously published data, propose plausible explanations for observations, and determine the strength and validity of both numerical results and hypotheses

	• demonstrate an appreciation of the role of numerical modelling, uncertainty and approximation in physics • critically evaluate arguments, assumptions, abstract concepts and data (that may be incomplete), make judgements, and frame appropriate questions to achieve a solution or identify a range of solutions to a problem.
Professional practice skills	• execute physics experiments safely and use basic laboratory apparatus and techniques effectively to generate data • produce clear and accurate scientific reports, and prepare and give technical presentations • make appropriate and effective use of scientific literature, such as textbooks and refereed research articles • write computer programs, and use computational tools and packages effectively for making calculations and for acquiring, analysing, and presenting information.
Transferrable skills	• demonstrate effective problem-solving skills in both theoretical and practical contexts • work independently in an effective manner, manage his or her own learning and show self-reliance and personal responsibility • participate effectively and constructively in groups; • retrieve, synthesise and evaluate information and data from a variety of sources • demonstrate good oral and written communication skills • manage time, prioritise workloads and work to deadlines; • evaluate and assess his or her own abilities, performance and understanding, reflect on his or her own learning and seek advice and feedback. In the case of students whose degree programme incorporates a professional placement, they should also be able to: • demonstrate an understanding of the general structure of their employing organisation, and of the particular significance of the work that they have undertaken; • apply knowledge and skills gained at the university to a work programme in a professional context; • demonstrate enhanced professional and practical skills commensurate with the placement project undertaken; • demonstrate enhanced personal skills in the following areas: communication, both oral and written, planning, time management, appraisal of new information, problem solving, decision making, relating to others and working as part of a team. In the case of students whose degree programme incorporates a study year abroad, they should also be able to: • work effectively in a culture different from that of the UK and operate at a scientific level in the language of the country concerned; • demonstrate increased self-confidence and maturity through living in a new environment and culture.

MPhys Physics, MPhys Physics with study year abroad and MPhys Physics with placement

For the MPhys Physics programmes, the aims are:

- to offer a stimulating and supportive environment which encourages students to be critically receptive to new ideas and to attain their full academic potential;
- to provide students with a sound base of knowledge and understanding in physics, and to expose students to the applications of physical principles in various branches of physics, including some current research areas within physics;
- to enable students to analyse and solve complex problems in physics, and to use mathematical and computational techniques, such as a programming language or other computer software, to model physical behaviour;
- to develop students' project-working skills and attributes to a level suitable for entry to postgraduate research degrees;
- to provide the foundations and transferable skills (such as problem-solving, investigative, oral and written communication, analytical, IT and personal skills) essential to further training and for the development of skills and knowledge in students' future careers or study, including the practice of the profession of Physics in academia or industry.

The programme learning outcomes are:

Knowledge and understanding	• to offer a stimulating and supportive environment which encourages students to be critically receptive to new ideas and to attain their full academic potential; • to provide students with a sound base of knowledge and understanding in physics, and to expose students to the applications of physical principles in various branches of physics, including some current research areas within physics; • to enable students to analyse and solve complex problems in physics, and to use mathematical and computational techniques, such as a programming language or other computer software, to model physical behaviour; • to develop students' project-working skills and attributes to a level suitable for entry to postgraduate research degrees; • to provide the foundations and transferable skills (such as problem-solving, investigative, oral and written communication, analytical, IT and personal skills) essential to further training and for the development of skills and knowledge in students' future careers or study, including the practice of the profession of Physics in academia or industry.
Intellectual skills	• analyse and solve a variety of advanced problems in physics by means of the appropriate application of physical principles and mathematical techniques ; • demonstrate an appreciation of the symbiotic relationship between verbal and mathematical descriptions of physical phenomena, and relate individual terms within mathematical equations to particular aspects of physical effects;

	• formulate theoretical and practical physics problems in precise terms, and identify relevant issues, principles and laws; • plan an experimental, theoretical or computational investigation, analyse results, compare data with theoretical predictions and previously published data, propose plausible explanations for observations, and determine the strength and validity of both numerical results and hypotheses ; • discuss critically the role of numerical modelling, uncertainty and approximation in physics ; • critically evaluate arguments, assumptions, abstract concepts and data (that may be incomplete), make judgements, and frame appropriate questions to achieve a solution or identify a range of solutions to a problem.
Professional practice skills	• plan and execute physics experiments safely, and use basic and specialised laboratory apparatus and techniques effectively to generate data ; • produce clear and accurate scientific reports on complex topics, and prepare and give technical presentations; • make appropriate and effective use of scientific literature, such as textbooks and refereed research articles, and online search tools ; • write computer programs, and use computational tools and packages effectively for making calculations and for acquiring, analysing, and presenting information at a level appropriate for project work within current research areas of physics.
Transferrable skills	• demonstrate effective problem-solving skills in both theoretical and practical contexts; • work independently in an effective manner, manage his or her own learning and show self-reliance and personal responsibility ; • participate effectively and constructively in groups; • retrieve, synthesise and evaluate information and data from a variety of sources ; • demonstrate good oral and written communication skills ; • manage time, prioritise workloads and work to deadlines; • evaluate and assess his or her own abilities, performance and understanding, reflect on his or her own learning and seek advice and feedback. In the case of students whose degree programme incorporates a research and/or professional placement, they should also be able to: • demonstrate an understanding of the general structure of their employing organisation, and of the particular significance of the work that they have undertaken; • apply knowledge and skills gained at the university to a work programme in a professional context; • demonstrate enhanced professional and practical skills commensurate with the placement project undertaken; • demonstrate enhanced personal skills in the following areas: communication, both oral and written, planning, time management, appraisal of new information, problem solving, decision making, relating to others and working as part of a team.

	In the case of students whose degree programme incorporates a study year abroad, they should also be able to: • work effectively in a culture different from that of the UK and operate at a scientific level in the language of the country concerned; • demonstrate increased self-confidence and maturity through living in a new environment and culture.

MPhys Physics with Astrophysics, MPhys Physics with Astrophysics with study year abroad and MPhys Physics with Astrophysics with placement

For the MPhys Physics programmes, the aims are:

- to offer a stimulating and supportive environment which encourages students to be critically receptive to new ideas and to attain their full academic potential;
- to provide students with a sound base of knowledge and understanding in physics, and to expose students to the applications of physical principles in various branches of physics (particularly astronomy and astrophysics), including some current research areas;
- to enable students to analyse and solve complex problems in physics (including astronomy and astrophysics), and to use mathematical and computational techniques, such as a programming language or other computer software, to model physical behaviour;
- to develop students' project-working skills and attributes to a level suitable for entry to postgraduate research degrees;
- to provide the foundations and transferable skills (such as problem-solving, investigative, oral and written communication, analytical, IT and personal skills) essential to further training and for the development of skills and knowledge in students' future careers or study, including the practice of the profession of Physics in academia or industry.

The programme learning outcomes are:

Knowledge and understanding	• general and fundamental concepts, principles, theories and results of physics • the role of mathematics in describing the physical world, and the particular mathematical principles and techniques underpinning point 1 above • the application of fundamental physical laws and principles within major areas of physics, particularly astronomy and astrophysics • selected recent developments within some current research areas of physics (including astronomy and astrophysics), building upon the knowledge and understanding acquired through points 1-3 above
Intellectual skills	• analyse and solve a variety of advanced problems in physics by means of the appropriate application of physical principles and mathematical techniques

	• demonstrate an appreciation of the symbiotic relationship between verbal and mathematical descriptions of physical phenomena, and relate individual terms within mathematical equations to particular aspects of physical effects • formulate theoretical and practical physics problems in precise terms, and identify relevant issues, principles and laws • plan an experimental, theoretical or computational investigation, analyse results, compare data with theoretical predictions and previously published data, propose plausible explanations for observations, and determine the strength and validity of both numerical results and hypotheses • discuss critically the role of numerical modelling, uncertainty and approximation in physics • critically evaluate arguments, assumptions, abstract concepts and data (that may be incomplete), make judgements, and frame appropriate questions to achieve a solution or identify a range of solutions to a problem.
Professional practice skills	• plan and execute physics experiments safely, and use basic and specialised laboratory apparatus and techniques effectively to generate data • produce clear and accurate scientific reports on complex topics, and prepare and give technical presentations • make appropriate and effective use of scientific literature, such as textbooks and refereed research articles, and online search tools • write computer programs, and use computational tools and packages effectively for making calculations and for acquiring, analysing, and presenting information at a level appropriate for project work within current research areas of physics.
Transferrable skills	• demonstrate effective problem-solving skills in both theoretical and practical contexts • work independently in an effective manner, manage his or her own learning and show self-reliance and personal responsibility • participate effectively and constructively in groups; • retrieve, synthesise and evaluate information and data from a variety of sources • demonstrate good oral and written communication skills • manage time, prioritise workloads and work to deadlines; • evaluate and assess his or her own abilities, performance and understanding, reflect on his or her own learning and seek advice and feedback. In the case of students whose degree programme incorporates a research and/or professional placement, they should also be able to: • demonstrate an understanding of the general structure of their employing organisation, and of the particular significance of the work that they have undertaken; • apply knowledge and skills gained at the university to a work programme in a professional context; • demonstrate enhanced professional and practical skills commensurate with the placement project undertaken; • demonstrate enhanced personal skills in the following areas:

	communication, both oral and written, planning, time management, appraisal of new information, problem solving, decision making, relating to others and working as part of a team. In the case of students whose degree programme incorporates a study year abroad, they should also be able to: • work effectively in a culture different from that of the UK and operate at a scientific level in the language of the country concerned; • demonstrate increased self-confidence and maturity through living in a new environment and culture.

PROGRAMME DESCRIPTION: STRUCTURE OF YOUR PROGRAMME

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

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

CHOICE OF PROGRAMMES AND CHANGING BETWEEN PROGRAMMES

At the start of their first year, all students register on one of the degree programmes described. 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 MPhys programme) should register on a relevant programme and inform the respective members of staff as early as possible within their second year (or their penultimate year, in the case of the MPhys research placements).
- 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 MPhys degree programme during Years 1 and 2, but may only progress or transfer to the penultimate year of an MPhys degree programme if they meet the required standard in their second year examinations.

UNIT AND PROGRAMME CATALOGUES

This is where you will find details about all years of your programme as well as details about individual units for the current academic year.
http://www.bath.ac.uk/catalogues/.

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

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

PROFESSIONAL BODY ACCREDITATION

Our programmes are all 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 integrated Masters degree during the application process.

YOUR LEARNING

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

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

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

YOUR TIMETABLE

Using MyTimetable, you can access your personal timetable and download it into an electronic calendar. http://www.bath.ac.uk/timetable/MyTimetable.htm.

Your In-Person Teaching (IPT) day and Live Online Interactive Learning (LOIL) sessions will show in your timetable. Links to LOIL sessions can also be accessed through the relevant unit page on the University's online learning environment, Moodle.

When you start your units, you will be able to access associated online material at a time that suits your schedule.

MyTimetable updates regularly, so should there be a change to your timetable, it will be reflected in MyTimetable.

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

PHYSICAL STUDY SPACE – 2020/21

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

OPTION CHOICES

Information about how and when to choose your option units can be found online. You will receive an email notification at the relevant point in the year when online unit selection is available. If you want to discuss your option choices, please contact your Director of Studies.

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

PLACEMENT SUPPORT

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 enhancing students' vocational outcomes and learning experiences by supporting placements. We have a dedicated placements team to support and guide you through the process of applying for, securing and successfully completing a placement.

The contact details for your Placements Manager and Placement Tutor can be found the ‘key contacts’ section at the start of the handbook.

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

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

Before going on placement you will receive a University Placement Handbook containing generic advice and information for whilst you are on placement. You will receive programme specific information directly from your Department.

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

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

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

PROFESSIONAL PLACEMENTS (UNIT PH20040)

All students have the option to spend a year of their BSc or MPhys 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.

MPHYS RESEARCH PLACEMENTS (UNIT PH40082)

MPhys students who choose the research placement option (either in addition to, or instead of, a professional placement) spend six months from July to December of their final year working on a high level Physics research project in an external organisation, before returning to the University for the final semester of their degree. The research placement replaces the on-campus full-semester research project undertaken by full time MPhys students, and is assessed in the same way as these projects.

OBTAINING A PLACEMENT

Placements are arranged during the second year (for professional placements) or the penultimate year (for MPhys research placements). As discussed previously, students wishing to undertake a placement must therefore be registered on a relevant degree programme as early as possible; by the beginning of year 2 for professional placements, and by the beginning of the penultimate year for MPhys research placements. 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.

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 is the case for both professional and MPhys research placements. 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.

ASSESSMENT OF PROFESSIONAL PLACEMENTS

A Placement Conference is held at the end of the professional placement year, during which students are required to give a poster presentation on their work. Although the professional placement year does not contribute towards the degree classification awarded, satisfactory performance is recorded on the student's transcript.

ASSESSMENT OF MPHYS RESEARCH PLACEMENTS

MPhys Research Placements are assessed in the same way as MPhys Research Projects, and carry the same weighting within a student's Overall Programme Average. An MPhys Conference is held during the semester 1 assessment period, at which all MPhys students give an oral presentation on the work they carried out for their research project or placement. Students also submit a written report on their research placement, and undertake a viva voce examination.

UNIT AND PROGRAMME CHANGES 2020/21

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

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

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

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

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

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

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

GIVING FEEDBACK ON YOUR PROGRAMME TO THE UNIVERSITY

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

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

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

ASSESSMENT

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

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

SUBMISSION DEADLINES

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

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

Please note that:

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

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

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

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

LATE SUBMISSION OF COURSEWORK

To ensure fairness to all students, you will be expected to hand in all assessed coursework and dissertations/projects by a specified date and time, and there are penalties for submitting work after the specified deadline. 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 the Department.

WORD COUNTS

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

If you do not observe the given word range or limit for the coursework task, for example if you exceed the word limit, then a penalty will be applied. The penalty that would apply should be stated in writing when the assignment task is distributed. You

should take note of what is included when calculating the total word count (e.g. whether or not contents pages, appendices, footnotes, bibliographies and other elements that are not part of the main text are included).

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

FEEDBACK ON ASSESSMENT

During your course, you will receive feedback on your assessed work. This feedback may take different forms, depending on the subject and type of assessment. You will be informed of the timing and nature of the feedback you will receive on each assessment, including whether the piece of work itself will be returned to you. For exam-type assessment, you may receive general feedback relevant to all who took the assessment rather than individual feedback. You can discuss feedback you receive on assessments alongside your performance and progress in your studies at meetings with your Personal Tutor.

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.

For the case of closed-book, on-campus examinations, 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 general 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,

ii. to provide students with the opportunity to discuss their general progress

on an individual basis;

iii. 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:

i. To attend all timetabled sessions within units and to undertake all assessments (both summative and formative) within units;

ii. To attend all tutorial sessions and to avail themselves of the opportunities for receiving feedback on their performance from their tutor;

iii. 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.

ACADEMIC INTEGRITY

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 styles for referencing material, within two general systems: Name/date (e.g. Harvard) and Numeric. **Ask your Director of Studies or Personal Tutor for further information and advice on the referencing style used on your programme.**

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

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

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 the Undergraduate Programme Administrator (phys-prog-admin@bath.ac.uk) in the first instance.

When you submit assessment, you will be expected to make a declaration that the work is your own and, where you have re-used your own work and/or used other sources of information, that you have referenced the material appropriately. The University uses a plagiarism detection service (currently Urkund), which searches the web and databases of reference material and content submitted by other students, to identify duplicated work. Where practical, all summative assessment is submitted to this service to check for similarities as an initial indicator of whether work has been plagiarised and an assessment offence committed.

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

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

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

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

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

Assessment offences – penalties

Any student who is found to have used unfair means in an assessment procedure will be penalised. 'Unfair means' here include cheating, fabrication, falsification, plagiarism, unfair collaboration or collusion. Penalties for use of unfair means may include failure of the assessment unit or part of a degree, with no provision for

reassessment or retrieval of that failure. Proven cases of plagiarism or cheating can also lead to an Inquiry Hearing or disciplinary proceedings. Claims of inadvertence or ignorance will not be accepted as a basis for mitigation of a penalty.

If you are accused of an offence, the Students' Union's welfare services are available to support you. You have the right to appeal against the outcome of the investigation.

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

IF CIRCUMSTANCES IMPACT ON YOUR ASSESSMENT ATTEMPT

Individual Mitigating Circumstances (IMCs) are the conditions which temporarily prevent you from undertaking assessment or significantly impair your performance in assessment. As such, the measure of their severity is not about impact on you, but the impact on your affected assessment. Full information about IMCs is available online. Please refer to **Important Links and Information** in this Handbook. **It is strongly advised that you become familiar with the available guidance and related regulations.**

ASSESSMENT PROCESSES

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

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

- *marking criteria (or assessment criteria)* - these are the knowledge, understanding and skills which it has been identified that students should demonstrate in the assessment and which are taken into account during marking. They are based on the learning outcomes being assessed
- *marking schemes* - these are detailed descriptions of how specific numbers of marks should be assigned against individual components of an answer within the assessment task
- *grade descriptors* - these are descriptions of the levels of achievement required in order to get a result within a given band of marks (e.g. 70% or more).

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

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

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

Scaling: All marks for a unit are reviewed at a meeting of a Board of Examiners for Units which will verify that the assessment process has been conducted appropriately and that the marks are an accurate reflection of the standards achieved. A Board of Examiners can decide to recommend a change to the provisional marks, based on evidence that there was a problem with the assessment which means the initial marks do not reflect the standards achieved by students. This adjustment is known as scaling and under these circumstances the marks of all affected students will be changed.

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

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

The External Examiners for your programme are:

- Dr Mark Hughes, School of Physics and Astronomy, University of Manchester;
- Professor Mark Fromhold, School of Physics and Astronomy, University of Nottingham.

It is not appropriate for students to make direct contact with External Examiners. If you are dissatisfied with the process or outcome of an assessment, and are considering whether to raise this either informally or formally, the sections of this Handbook on **Academic Appeals** and **Dissatisfaction with a University Service or Facility** (**Complaints)** give some more information about the University's procedures for student complaints and academic appeals. The University's mechanisms for student representation are designed to enable students to engage with the quality management process through which the University considers and responds to External Examiners' comments and suggestions.

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

PRIZES AND AWARDS

The Department of Physics awards prizes to students who perform particularly well in various categories. These are:

- The Patrick Squire Prize, awarded for best performance in the First Year Laboratory;
- 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.

ASSESSMENT REGULATIONS

The University's New Framework for Assessment: Assessment Regulations: Phase 1 for first-degree programmes ('NFAAR-UG') specifies the rules governing students' progression from one stage of their programme to the next as well as for the award of degrees. The rules cover all areas of assessment, including supplementary assessment and the extent to which failure may be condoned.

Your programme is covered by the NFAAR-UG, so your work will be assessed according to its rules. If at any time you are in doubt about how NFAAR-UG provisions apply to your work, please consult your Director of Studies.

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

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

YOUR PROGRAMME AND HOW YOU ARE ASSESSED

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

In the Programme and Unit Catalogues, there are links to the relevant appendices of the NFAAR-UG which state exactly how the assessment rules operate for each stage of your programme.

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

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

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

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

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 you will progress (or, after the final stage, be recommended for an award).

If you fail a large number of units you might fail the stage outright without any opportunity for supplementary assessment. (Further information on supplementary assessment is provided below.)

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

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

Your degree result is based on the calculation of your Overall Programme Average (OPA) based on the stages in Parts 2 and 3 of your programme. The contribution of each stage of the programme is set out in the Programme and Unit Catalogues. Stages in Part 1 are not included in the OPA calculation.

SUPPLEMENTARY ASSESSMENT

‘Supplementary assessment’ is the term normally used for an opportunity given to a student to retrieve failure before starting the next stage of a programme.

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

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

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

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

The outcomes of failing a supplementary assessment are as follows:

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

EXIT AWARDS – CERTHE AND DIPLHE

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

ACADEMIC APPEALS

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

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

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

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

CORE UNIVERSITY INFORMATION

UNIVERSITY REGULATIONS FOR STUDENTS

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

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

ACCESSING UNIVERSITY EMAIL

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

The University will often communicate with you about a range of important matters requiring action from you, including registration, assessment, degree ceremonies, and matters such as tuition fees, via your University email account. It is a University regulation that you access your University email account regularly, even if you are out on placement or study abroad.

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

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

STUDENTS' UNION MEMBERSHIP

All students registered with the University are automatically given membership of the Students' Union; however you have the right not to be a member. Information on opting out of this membership, and the Code of Practice for the Students' Union, are available online. Please refer to **Important Links and Information** in this Handbook.

DATA PROTECTION

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

REGISTRATION STATUS

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

Regulation 1.1 explains the requirement to register. Regulations 2.4 and 2.10 explain the consequences of non-payment of tuition fees.

ACADEMIC ENGAGEMENT MONITORING FOR TIER 4 STUDENTS

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

CHANGE IN YOUR CIRCUMSTANCES

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

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

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

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

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

If you are an international student holding a Tier 4 visa, you should consult the advisers in the Student Immigration Service about the implications of suspending or withdrawing from your programme. See **Important Links and Information** in this Handbook.

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

DISSATISFACTION WITH A UNIVERSITY SERVICE OR FACILITY (COMPLAINTS)

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

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

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

If you do need to make a complaint, there are procedures in place to deal with it, outlined in the University's **Student Complaints Procedure**. These procedures are designed to ensure that your complaint will be dealt with in good faith and that you will not be penalised for complaining.

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

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

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