**Programme Specification**

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| **Please note:** This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she passes the programme. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each module can be found in the programme handbook. The accuracy of the information contained in this specification is reviewed by the University and may be checked by the Quality Assurance Agency for Higher Education. |

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| **BSc (Hons) Physics**  **MPhys Physics** |

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| 1. **Awarding Institution/Body** | University of Kent |
| 1. **Teaching Institution** | University of Kent |
| 1. **School responsible for management of the programme** | School of Physical Sciences |
| 1. **Teaching Site** | Canterbury |
| 1. **Mode of Delivery** | Full-time |
| 1. **Programme accredited by** | Institute of Physics |
| 1. **a) Final Award** | MPhys  BSc (Hons) |
| 7. **b) Alternative Exit Awards** | BSc (non hons) Physics;  Diploma in Physics;  Certificate in Physics |
| 1. **Programme** | Physics |
| 1. **UCAS Code (or other code)** | F300 BSc Hons  F303 MPhys |
| 1. **Credits/ECTS Value** | 360 (ECTS 180) BSc Hons  480 (ECTS 240) MPhys |
| 1. **Study Level** | Undergraduate |
| 1. **Relevant QAA subject benchmarking group(s)** | Physics, Astronomy and Astrophysics (2016) |
| 1. **Date of creation/revision** | Feb 2017/revised FSO Dec 2017 |
| 1. **Intended Start Date of Delivery of this Programme** | September 2019 |

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| 1. **Educational Aims of the Programme**   The programme aims to: |
| 1. To instil and/or enhance in students a sense of enthusiasm for physics through an understanding of the role of the discipline at the core of our intellectual understanding of all aspects of nature and as the foundation of many of the pure and applied sciences. 2. To instil and/or enhance in students an appreciation of its application in different contexts, and to involve them in an intellectually stimulating and satisfying experience of learning within a research-led environment. 3. To help motivate and to support a wide range of students in their endeavours to realise their academic potential. 4. To provide students with a balanced foundation of physics knowledge and practical skills, and to produce in students an understanding of scientific methodology. 5. To enable students to undertake and report on an experimental and/or theoretical investigation; in the case of the MPhys to base this in part on an extended research project. 6. To develop in students a range of transferable skills of general value. 7. To develop in students the ability to apply their skills, knowledge and understanding in physics to the solution of theoretical and practical problems in physics. 8. To provide students with a knowledge and skills base from which they can proceed to further studies in specialised areas of physics or multi-disciplinary areas involving physical principles; the MPhys is particularly geared for those wishing to undertake physics research. 9. To generate in students an appreciation of the importance of physics in the industrial, economic, environmental and social contexts. |

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| **16 Programme Outcomes**  The programme provides opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the following areas. The programme outcomes have references to the subject benchmarking statement for Physics, Astronomy and Astrophysics (2016) (SB).    It should be noted that, in line with relevant the QAA benchmark statement, we here discuss the BSc and MPhys programmes together: the generic aims and outcomes are the same for both programmes. However, in the case of the MPhys, the programme allows students to study physics to a greater depth and to extend the opportunities to develop their skills. The MPhys is a 4 year period of broadly based but integrated study; overall, it is targeted towards those students wishing to enter careers as professional research physicists in industrial, university or other settings. |

**A. Knowledge and Understanding of:**

1. Physical laws and principles, and their application to diverse areas of physics (this will include electromagnetism, classical and quantum mechanics, statistical physics and thermodynamics, wave phenomena and the properties of matter as fundamental aspects, with additional material from nuclear and particle physics, condensed matter physics, materials, plasmas and fluids; see module syllabuses for details). **(SB 3.1, 3.2, 6.5)**
2. [intentionally left blank]
3. MPhys students - a systematic understanding of most fundamental laws and principles of physics, along with their application to a variety of areas in physics, some of which are at (or are informed by) the forefront of the discipline. **(SB 3.1, 6.6)**

**Skills and Other Attributes**

**B. Intellectual Skills:**

1. An ability to identify relevant principles and laws when dealing with problems, and to make approximations necessary to obtain solutions. **(SB 3.3, 4.2, 6.5)**
2. An ability to solve problems in physics using appropriate mathematical tools. **(SB 3.3, 4.2, 6.5)**
3. An ability to execute and analyse critically the results of an experiment or investigation and draw valid conclusions. To evaluate the level of uncertainty in these results and compare them with expected outcomes, theoretical predictions or with published data; thereby to evaluate the significance of their results in this context. **(SB 3.4, 3.5, 4.2, 4.3, 5.1, 6.5)**
4. An ability to use mathematical techniques and analysis to model physical behaviour. **(SB 3.3, 6.5)**
5. [intentionally left blank]
6. MPhys students - an ability to solve advanced problems in physics using appropriate mathematical tools, to translate problems into mathematical statements and apply their knowledge to obtain order of magnitude or more precise solutions as appropriate. **(SB 4.2, 6.6)**
7. MPhys students - an ability to interpret mathematical descriptions of physical phenomena. **(SB 4.2, 6.6)**
8. MPhys students - an ability to plan an experiment or investigation under supervision and to understand the significance of error analysis. **(SB 3.4, 4.2, 6.6)**
9. MPhys students - a working knowledge of a variety of experimental, mathematical and/or computational techniques applicable to current research within physics. **(SB 6.6)**

**C. Subject-specific Skills:**

1. Competent use of appropriate C&IT packages/systems for the analysis of data and the retrieval of appropriate information. **(SB 4.4, 5.1, 5.3, 6.4, 6.5)**
2. An ability to present and interpret information graphically. **(SB 5.1, 6.4)**
3. An ability to communicate scientific information, in particular to produce clear and accurate scientific reports. **(SB 3.4, 4.5, 5.1, 6.5)**
4. A familiarity with laboratory apparatus and techniques, including relevant aspects of Health & Safety. **(SB 3.4, 4.2, 5.1, 6.4)**
5. The systematic and reliable recording of experimental data. **(SB 3.4 , 4.2, 5.1, 6.5)**
6. An ability to make use of appropriate texts, research-based materials or other learning resources as part of managing their own learning. **(SB 3.5, 4.4, 4.5, 5.1, 6.5)**
7. MPhys students - a C&IT skills which show fluency at the level and range needed for project work such as familiarity with a programming language, simulation software or the use of mathematical packages for manipulation and numerical solution of equations. **(SB 4.4, 6.6)**
8. MPhys students - an ability to communicate complex scientific ideas, the conclusion of an experiment, investigation or project concisely, accurately and informatively. **(SB 4.4, 6.6)**
9. MPhys students - experimental skills showing the competent use of specialised equipment, the ability to identify appropriate pieces of equipment and to master new techniques and equipment. **(SB 6.6)**
10. MPhys students - an ability to make use of research articles and other primary sources. **(SB 4.4, 6.6)**

**D. Transferable Skills:**

1. Problem-solving skills, in the context of both problems with well-defined solutions and open-ended problems; an ability to formulate problems in precise terms and to identify key issues, and the confidence to try different approaches in order to make progress on challenging problems. Numeracy is subsumed within this area. **(SB 3.3, 4.4, 5.3, 6.5)**
2. Investigative skills in the context of independent investigation including the use of textbooks and other available literature, databases, and the interaction with colleagues to extract important information. **(SB 3.5, 4.4, 5.1, 6.5)**
3. Communication skills in the area of dealing with surprising ideas and difficult concepts, including listening carefully, reading demanding texts and presenting complex information in a clear and concise manner. C&IT skills are an important element to this. **(SB 4.4, 4.5, 6.5)**
4. Analytical skills – associated with the need to pay attention to detail and to develop an ability to manipulate precise and intricate ideas, to construct logical arguments and to use technical language correctly. **(SB 4.4, 5.1, 6.5)**
5. Personal skills – the ability to work independently, to use initiative, to organise oneself to meet deadlines and to interact constructively with other people. **(SB 4.4, 6.5)**

**Teaching/learning and assessment methods and strategies used to enable the programme learning outcomes to be achieved and demonstrated.**

**Learning & Teaching**

* Workshops and laboratory classes/projects; personal study using textbooks, web-based material and other self-study material; group exercises, written and oral presentations.
* Lectures (gathering and ordering information) and examples classes.
* MPhys students add to this an extended, research-led project.

**Assessment**

* *C*oursework involving problems, essays, laboratory/console/project reports and oral presentations.
* Written (unseen) examinations.
* MPhys students add to this an extended project dissertation, talk and viva.

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| For more information on the skills developed by individual modules and on the specific learning outcomes associated with any Certificate, Diploma or BA/BSc non-honours awards relating to this programme of study, see the module mapping table, located at the end of this specification. |

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| **17 Programme Structures and Requirements, Levels, Modules, Credits and Awards**  The BSc programme is studied over three years full-time.  The programme is divided into three stages, each stage comprising modules to a total of 120 credits. Students must successfully complete each module in order to be awarded the specified number of credits for that module. One credit corresponds to approximately ten hours of 'learning time' (including all classes and all private study and research). Thus obtaining 120 credits in an academic year requires 1,200 hours of overall learning time. For further information on modules and credits, refer to the Credit Framework at <http://www.kent.ac.uk/teaching/qa/credit-framework/creditinfo.html>.  Each module and programme is designed to be at a specific level. For the descriptors of each of these levels, refer to Annex 2 of the Credit Framework at <http://www.kent.ac.uk/teaching/qa/credit-framework/creditinfoannex2.html>. To be eligible for the award of an honours degree students must obtain 360 credits, at least 210 of which must be at Level 5 or above, including at least 90 credits at level 6 or above at Stage 3.  Students successfully completing Stage 1 of the programme and meeting credit framework requirements who do not successfully complete Stage 2 will be eligible for the award of the Certificate in Physics. Students successfully completing Stage 1 and Stage 2 of the programme and meeting Credit Framework requirements who do not successfully complete Stage 3 will be eligible for the award of the Diploma in Physics. Students successfully completing Stage 2 of the programme and achieving 300 credits overall including at least 60 credits at level 6 or above in Stage 3 and meeting Credit Framework requirements will be eligible for the award of a BSc non-honours degree.  Compulsory modules are core to the programme and must be taken by all students studying the programme. Optional modules provide a choice of subject areas, from which students will select a stated number of modules.  Where a student fails a module(s) due to illness or other mitigating circumstances, such failure may be condoned, subject to the requirements of the Credit Framework and provided that the student has achieved the **programme** learning outcomes. For further information, refer to the Credit Framework at <http://www.kent.ac.uk/teaching/qa/credit-framework/creditinfo.html>.  Where a student fails a module(s), but has marks for such modules within 10 percentage points of the pass mark, the Board of Examiners may nevertheless award the credits for the module(s), subject to the requirements of the Credit Framework and provided that the student has achieved the **programme** learning outcomes. For further information, refer to the Credit Framework.  At its discretion, the University allows for narrow failure in a small proportion of modules to be compensated by good performance in other modules or, in cases of documented illness or other mitigating circumstances, condoned. Failure in certain modules, however, may not be compensated, as indicated by the symbol \* in the Table below. In particular, no Stage 1 modules will be compensated. Thus Stage 1 must be passed without any modules being compensated in order to progress into Stage 2 of the degree programme. Because of the intellectually progressive nature of this degree programme, each year’s study builds on the previous year, and requires successful completion of all of the previous year’s study as a pre-requisite. For this reason, Boards of Examiners will NOT permit the trailing of any modules except at their discretion in exceptional circumstances.  **MPhys -** the programme is studied over four years full time. It is divided into four stages each comprising of 120 credits and students must achieve specified requirements before being permitted to proceed to the next stage. For full-time students each stage represents an academic year of study. Thus, for a full-time student each year of study involves approximately 1200 hours of learning time. Each module is designated at one of four ascending levels, Certificate (4), Intermediate (5), Honours (6) or Extended Masters (7). To be eligible for the award of an honours MPhys Physics degree students normally have to obtain 480 credits, at least 330 of which must be Level 5 or above, and at least 90 of which must be level 6 and at least 120 of which must be at Level 7.  Note - in common with national practice in physics, there are progression thresholds in place for the MPhys programme: you must achieve a minimum of 120 credits and 55% as an average assessment mark across your stage 2 modules at the first attempt in order to progress into stage 3; a failure to achieve the 55% average will mean that you will be obliged to transfer to stage 3 of the BSc programme. You must achieve a minimum of 120 credits and 50% as an average assessment mark across your stage 3 modules at the first attempt in order to progress into stage 4; a failure to meet this requirement will mean that you will graduate at that stage with either a BSc (Hons) or BSc (Non-Honours) degree depending on the level of credit achieved. A student who successfully completes Stage 3 of MPhys programme but does not complete Stage 4 of the MPhys programme will be eligible for the award of a BSc (Hons) degree. If a student fails to complete Stage 4 of the MPhys programme at the first opportunity, the Board of Examiners may permit the student to undertake further assessment in the failed modules.  ***Alternative exit awards:***  To obtain the following alternative exit awards students must obtain as follows:  Certificate of Higher Education - at least 120 credits at level 4 or above;  Diploma of Higher Education - 240 credits with at least 90 credits at level 5 or above;  BSc (non-Honours degree) - 300 credits with least 150 credits at level 5 or above including at least 60 credits at level 6 or above. The non-honours BSc in Physics, Physics with Astrophysics or Astronomy, Space Science and Astrophysics is only available as a fall-back award for students who have successfully completed enough credit at Stage 3;  BSc (Honours degree) - 360 credits with at least 210 credits at level 5 or above including at least 90 credits at level 6 or above. |

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| **KV Code** | **Code** | **Title** | **Level** | **Credits** | **Term(s)** |
| **Stage 1** | | | | | |
| **Compulsory Modules – 120 credits** | | | | | |
| PHYS3040\* | PH304\* | Introduction to Astronomy and Special Relativity | 4 | 15 | 1 |
| PHYS3110\* | PH311\* | Mathematics I | 4 | 15 | 1 |
| PHYS3120\* | PH312\* | Mathematics II | 4 | 15 | 2 |
| PHYS3210\* | PH321\* | Mechanics | 4 | 15 | 1 |
| PHYS3220\* | PH322\* | Electricity and Light | 4 | 15 | 2 |
| PHYS3230\* | PH323\* | Thermodynamics and Matter | 4 | 15 | 2 |
| PHYS3700\* | PH370\* | Laboratory and Computing Skills for Physicists | 4 | 30 | 1 & 2 |
| **Stage 2** | | | | | |
| **Compulsory Modules** | | | | | |
| PHYS5000 | PH500 | Physics Laboratory | 5 | 30 | 1 & 2 |
| PHYS5020 | PH502 | Quantum Physics | 5 | 15 | 1 |
| PHYS5030 | PH503 | Atomic Physics | 5 | 15 | 2 |
| PHYS5040 | PH504 | Electromagnetism and Optics | 5 | 15 | 1 |
| PHYS5130 | PH513 | Medical Physics | 5 | 15 | 2 |
| PHYS5880 | PH588 | Mathematical Techniques for Physical Sciences | 5 | 15 | 1 |
| **Optional Modules** Students must select 15 credits from the list of optional modules approved by the School of Physical Sciences | | | | | |
| **Stage 3** (BSc only) | | | | | |
| **Compulsory Modules – 120 credits** | | | | | |
| PHYS6020 | PH602 | Physics Problem Solving | 6 | 15 | 1 |
| PHYS6030 | PH603 | Physics Group Project | 6 | 15 | 2 |
| PHYS6040 | PH604 | Relativity, Optics and Maxwell’s Equations | 6 | 15 | 1 |
| PHYS6050 | PH605 | Thermal and Statistical Physics | 6 | 15 | 2 |
| PHYS6060 | PH606 | Solid State Physics | 6 | 15 | 2 |
| PHYS6110 | PH611 | Numerical and Computational Methods | 6 | 15 | 2 |
| PHYS6170 | PH617 | Physics Project Laboratory | 6 | 15 | 1 & 2 |
| PHYS6660 | PH666 | Nuclear and Particle Physics | 6 | 15 | 1 |
| **Stage 3** (MPhys only) | | | | | |
| **Compulsory Modules – 120 credits** | | | | | |
| PHYS6020 | PH602 | Physics Problem Solving | 6 | 15 | 1 |
| PHYS6040 | PH604 | Relativity, Optics and Maxwell’s Equations | 6 | 15 | 1 |
| PHYS6050 | PH605 | Thermal and Statistical Physics | 6 | 15 | 2 |
| PHYS6060 | PH606 | Solid State Physics | 6 | 15 | 2 |
| PHYS6110 | PH611 | Numerical and Computational Methods | 6 | 15 | 2 |
| PHYS6210 | PH621 | Analytical Mechanics | 6 | 15 | 1 & 2 |
| PHYS6660 | PH666 | Nuclear and Particle Physics | 6 | 15 | 1 |
| PSCI7000 | PS700 | Physical Sciences Research Investigation | 7 | 15 | 1 & 2 |
| **Stage 4** (MPhys only) | | | | | |
| **Compulsory Modules – 90 credits** | | | | | |
| PHYS7000 | PH700 | Physics Research Project | 7 | 60 | 1 & 2 |
| PHYS7770 | PH777 | Advanced Quantum Mechanics | 7 | 15 | 1 |
| PHYS7520 | PH752 | Magnetism and Superconductivity | 7 | 15 | 2 |
| **Optional Modules** Students must select 30 credits from the list of optional modules approved by the School of Physical Sciences | | | | | |

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| **18 Work-Based Learning** |
| Where relevant to the programme of study, provide details of any work-based learning element, inclusive of employer details, delivery, assessment and support for students. |
| Not relevant. |

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| **19 Support for Students and their Learning** |
| * School and University induction programme * Programme/module handbooks * Library services [http://www.kent.ac.uk/library](http://www.kent.ac.uk/library/) * Student Support [http://www.kent.ac.uk/studentsupport](http://www.kent.ac.uk/studentsupport/) * Student Wellbeing [www.kent.ac.uk/studentwellbeing](http://www.kent.ac.uk/studentwellbeing/) * Centre for English and World Languages <http://www.kent.ac.uk/cewl/index.html> * Student Learning Advisory Service <http://www.kent.ac.uk/uelt/about/slas.html> * PASS system <https://www.kent.ac.uk/teaching/qa/codes/taught/annexg.html> * Academic Adviser system <https://www.kent.ac.uk/teaching/advisers/index.html> * Kent Union [www.kentunion.co.uk](http://www.kentunion.co.uk/) * Careers and Employability Services [www.kent.ac.uk/ces](http://www.kent.ac.uk/ces/) * Counselling Service [https://www.kent.ac.uk/studentwellbeing/counselling](https://www.kent.ac.uk/studentwellbeing/counselling/) * Information Services (computing and library services) [www.kent.ac.uk/is](http://www.kent.ac.uk/is/) * Undergraduate student representation at School, Faculty and Institutional levels * International Recruitment Office [https://www.kent.ac.uk/internationalstudent](https://www.kent.ac.uk/internationalstudent/); International Partnerships Office [https://www.kent.ac.uk/global/partnerships](https://www.kent.ac.uk/global/partnerships/) * Medical Centre <https://www.kent.ac.uk/studentwellbeing/medicalcentre.html> * Departmental student study room with networked PCs and a selection of textbooks * Well-equipped laboratories with technician support * Departmental website with learning support materials |

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| **20 Entry Profile**  The minimum age to study a degree programme at the university is normally at least 17 years old by 20 September in the year the programme begins. There is no upper age limit. |
| 20.1 **Entry Route**  For current information, please refer to the University prospectus. |
| * GCSE passes, including English or Use of English, and at least Physics and Mathematics at A-level. The usual offer level for the BSc programmes is ‘BBB’ and the offer level for the MPhys programmes is ‘ABB’. * International students for whom English is not the first language an average 6.5 in IELTs test, minimum 6.0 in reading and writing is required. * International Baccalaureate: 34 points overall or 15 at Higher including Mathematics 5 at HL or 6 at SL (not Mathematics studies). * Mature and overseas students considered on an individual basis.   For further information, please refer to the online prospectus, and in particular regarding entry via Curriculum 2000, Access/Foundation programmes, BTEC, International Baccalaureate, Irish Leaving Certificate, university degree, Scottish qualifications and VCE A level (AGNVQ). Please also consult the prospectus for additional information for mature applicants and for international applicants, and for details regarding the accreditation of prior learning. |
| 20.2 **What does this programme have to offer?** |
| * A thorough training in a stimulating learning environment, to become equipped as graduates to collaborate and compete successfully with your colleagues throughout your subsequent careers. * A structured opportunity to gain the numeracy, theoretical and practical problem-solving and communication skills so highly regarded by employers. * The BSc programme offers a broad training in Physics and is good preparation for a wide range of careers in manufacturing and service industries, education, the media and the financial sector. * The MPhys programme enhances core Physics knowledge and skills with the further, in-depth training needed for a Physics-based career, including practical aspects of the research process. * Highly rates of graduate employment. * A pleasant and friendly campus with high student morale and a dedicated, professional teaching staff. |
| 20.3 **Personal Profile** |
| * A fascination with, and a desire to understand, the ‘how and why’ of the material world around us. |

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| 21 **Methods for Evaluating and Enhancing the Quality and Standards of Teaching and Learning** |
| 21.1 **Mechanisms for review and evaluation of teaching, learning, assessment, the curriculum and outcome standards** |
| * Student module evaluations * Annual programme and module monitoring reports <http://www.kent.ac.uk/teaching/qa/codes/taught/annexe.html> * External Examiners system <http://www.kent.ac.uk/teaching/qa/codes/taught/annexk.html> * Periodic programme review <http://www.kent.ac.uk/teaching/qa/codes/taught/annexf.html> * Annual staff appraisal * Peer observation * Quality Assurance Framework <http://www.kent.ac.uk/teaching/qa/codes/index.html> * QAA Higher Education Review <http://www.qaa.ac.uk/InstitutionReports/types-of-review/higher-education-review/Pages/default.aspx> * Continuous monitoring of student progress and attendance * Personal Academic Support System (PASS): the extensive use of attendance and other measures of diligence within a defined system of personal tutors and administrative support, and via the office of a Senior Tutor * Three-stage vetting process of examination questions: module team, internal examiner, external examiners * Double marking and/or moderation of all examination and some other assessed work at Stage 2 and above * Active staff development programme * Mentoring/PGCHE training programme for new lecturers * University regulations for undergraduate certificates, diplomas and degrees; University examination conventions; Student Charter; Students’ Union Code of Practice * External accreditation by the Institute of Physics |
| 21.2 **Committees with responsibility for monitoring and evaluating quality and standards** |
| * Staff-Student Liaison Committee * School Education Committee * Faculty Education Committee * Faculty Board * Education Board * Board of Examiners |
| 21.3 **Mechanisms for gaining student feedback on the quality of teaching and their learning experience** |
| * Student module evaluations * Staff-Student Liaison Committee * Student rep system (School, Faculty and Institutional level) * Annual NSS * Discussions with personal tutor and/or members of the departmental teaching and support staff |
| 21.4 **Staff Development priorities include:** |
| * PGCHE requirements * HEA (associate) fellowship membership * Annual appraisals * Institutional Level Staff Development Programme * Academic Practice Provision (PGCHE, other development opportunities) * Professional body membership and requirements * Programme team meetings * Research seminars * Conferences * Study leave * Equality, Diversity and Inclusivity (EDI) awareness * Threshold academic qualifications and experience on appointment * IoP requirements |

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| 22 **Indicators of Quality and Standards** |
| * Results of periodic programme review (2016) * Professional accreditation by the Institute of Physics (2017) * QAA Higher Education Review 2015 * Annual External Examiner reports * Annual programme and module monitoring reports |
| 22.1 **The following reference points were used in creating these specifications:** |
| * QAA UK Quality Code for Higher Education <http://www.qaa.ac.uk/assuring-standards-and-quality> * QAA Benchmarking statements for Physics, Astronomy and Astrophysics (2016) * Accreditation requirements of Institute of Physics * School and Faculty plan * University Plan [https://www.kent.ac.uk/about/plan](https://www.kent.ac.uk/about/plan/) and Learning and Teaching Strategies <https://www.kent.ac.uk/uelt/strategies/lta.html> * Staff research activities * Kent Inclusive Practices (<https://www.kent.ac.uk/studentsupport/accessibility/inclusive-practice.html>) * A range of IoP publications and reports |

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| 23 **Inclusive Programme Design** |
| The School recognises and has embedded the expectations of current equality legislation, by ensuring that the programme is as accessible as possible by design. Additional alternative arrangements for students with Inclusive Learning Plans (ILPs)/declared disabilities will be made on an individual basis, in consultation with the relevant policies and support services. |

*Module mapping table to be amended as appropriate to the programme specification. Where the programme includes many optional modules, it is acceptable to include only the compulsory modules in the table. (1) Option only available to students on the MPhys with Year abroad programme; (2) Option only available to students on the MPhys programme;*

**Programme Title: MPhys/BSc (Hons) Physics**

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|  | **A1** | **A3M** | **B1** | **B2** | **B3** | **B4** | **B6**  **M** | **B7M** | **B8M** | **B9M** | **C1** | **C2** | **C3** | **C4** | **C5** | **C6** | **C7M** | **C8M** | **C9M** | **C**  **10M** | **D1** | **D2** | **D3** | **D4** | **D5** |
| **PH304** | x |  | x | x |  | x |  |  |  |  |  | x |  |  |  | x |  |  |  |  | x |  |  | x |  |
| **PH311** |  |  |  | x |  |  |  |  |  |  |  | x |  |  |  | x |  |  |  |  | x |  |  | x |  |
| **PH312** |  |  |  | x |  |  |  |  |  |  |  | x |  |  |  | x |  |  |  |  | x |  |  | x |  |
| **PH321** | x |  | x | x |  | x |  |  |  |  |  | x |  |  |  | x |  |  |  |  | x |  |  | x |  |
| **PH322** | x |  | x | x |  | x |  |  |  |  |  | x |  |  |  | x |  |  |  |  | x |  |  | x |  |
| **PH323** | x |  | x | x |  | x |  |  |  |  |  | x |  |  |  | x |  |  |  |  | x |  |  | x |  |
| PH370 |  |  | x | x | x | x |  |  |  |  | x | x | x | x | x | x |  |  |  |  | x | x | x | x | x |
| **PH500** |  |  | x |  | x | x |  |  |  |  | x | x | x | x | x | x |  |  |  |  | x | x | x | x | x |
| **PH502** | x |  | x | x |  | x |  |  |  |  |  | x |  |  |  | x |  |  |  |  | x |  |  | x |  |
| **PH503** | x |  | x | x |  | x |  |  |  |  |  | x |  |  |  | x |  |  |  |  | x |  |  | x |  |
| **PH504** | x |  | x | x |  | x |  |  |  |  |  | x |  |  |  | x |  |  |  |  | x |  |  | x |  |
| **PH507** | x |  | x | x |  | x |  |  |  |  |  | x |  |  |  | x |  |  |  |  | x |  |  | x |  |
| **PH508** | x |  | x | x |  | x |  |  |  |  |  | x |  |  |  | x |  |  |  |  | x |  |  | x |  |
| **PH513** | x |  | x | x |  | x |  |  |  |  |  | x |  |  |  | x |  |  |  |  | x |  |  | x |  |
| **PH588** |  |  |  | x |  |  |  |  |  |  |  | x |  |  |  | x |  |  |  |  | x |  |  | x |  |
| **PH602** |  |  | x | x |  |  |  |  |  |  | x | x | x |  |  | x |  |  |  |  | x |  |  | x | x |
| **PH603** |  |  |  |  |  |  |  |  |  |  |  | x | x |  |  | x |  |  |  |  | x | x | x | x | x |
| **PH604** | x |  | x | x |  | x |  |  |  |  |  | x |  |  |  | x |  |  |  |  | x |  |  | x |  |
| **PH605** | x |  | x | x |  | x |  |  |  |  |  | x |  |  |  | x |  |  |  |  | x |  |  | x |  |
| **PH606** | x |  | x | x |  | x |  |  |  |  |  | x |  |  |  | x |  |  |  |  | x |  |  | x |  |
| **PH611** | x |  | x | x |  | x | x | x |  | x | x | x |  |  |  | x |  |  |  |  | x |  |  | x | x |
| **PH617** |  |  | x |  | x | x |  |  |  |  | x | x | x | x | x | x |  |  |  |  | x | x | x | x |  |
| **PH621** | x |  | x | x |  | x |  |  |  |  |  | x | x |  |  | x |  |  |  |  | x | x | x | x | x |
| **PH666** | x |  | x | x |  | x |  |  |  |  |  | x |  |  |  | x |  |  |  |  | x |  |  | x |  |
| **PS700** |  |  | x |  | x | x |  |  | x | x | x | x | x |  |  | x | x | x |  | x | x | x | x | x | x |
| **PH700** |  |  | x | x | x |  |  | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| **PH709** |  | O | O | O |  | O | O | O |  |  |  | O |  |  |  | O |  |  |  | O | O |  |  | O |  |
| **PH711** |  | O | O | O |  | O | O | O |  | O |  | O |  |  |  | O |  |  |  | O | O |  |  | O |  |
| **PH752** |  | x | x | x |  | x | x | x |  |  |  | x |  |  |  | x |  |  |  | x | x |  |  | x |  |
| **PH777** | x | x | x | x |  | x | x | x |  |  |  | x |  |  |  | x |  |  |  | x | x |  |  | x |  |
| **PS700(1)** |  |  | O |  | O | O |  |  | O | O | O | O | O |  |  | O | O | O |  | O | O | O | O | O | O |
| **PS701(2)** |  |  | O |  |  |  |  |  |  |  |  | O |  |  |  | O |  |  |  |  | O |  |  | O |  |