

## Programme Specification

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### MPhys Physics with Industrial Placement (2020-21)

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 s/he takes full advantage of the learning opportunities that are provided.

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| Awarding Institution                              | University of Southampton  |
| Teaching Institution                              | University of Southampton  |
| Mode of Study                                     | Full-time  |
| Duration in years                                 | 4  |
| Accreditation details                             | Institute of Physics (IOP)   |
| Final award                                       | Master of Physics (MPhys)  |
| Name of award                                     | Physics with Industrial Placement  |
| Interim Exit awards                               | Bachelor of Science with Honours (BSc (Hons))<br>Certificate of Higher Education (CertHE)<br>Diploma of Higher Education (DipHE) |
| FHEQ level of final award                         | Level 7  |
| UCAS code   | N/A  |
| Programme code                                    | 5229   |
| QAA Subject Benchmark or other external reference | Physics, Astronomy and Astrophysics 2019   |
| Programme Lead                                    | Malgosia Kaczmarek   |

### Programme Overview

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#### Brief outline of the programme

MPhys programmes taught at Southampton provide a sound and stimulating, as well as supportive, intellectual environment. They aim to provide an enjoyable and high quality learning experience, preparing students well for their future professional careers.

In choosing to study physics, you will not only gain in-depth understanding and knowledge of fundamental physics, but also will have the opportunity to appreciate its different aspects and role, in for example, applications or in multi-disciplinary research and technology.

Southampton not only enjoys an outstanding international reputation in all areas of research pursued in Physics and Astronomy, but also for major activity in knowledge and technology transfer towards cutting edge applications. Indeed, the University as a whole, is one of the most successful in the number of spin-off companies

that have emerged from research carried out in its labs. Therefore, Southampton is particularly well placed to launch its graduates towards successful and wide ranging careers within physics and related fields.

In the final years of MPhys, there are opportunities to study specialist subjects to advanced level as well as develop key scientific research and transferable skills, important for both physics and wider working environment careers. In the 4th year of MPhys, there are also options for students interested in research to pursue projects at the cutting edge of science and learn important experimental and theoretical techniques.

MPhys with Industrial Placement (MPhys with IP) complements those existing programmes within Physics and Astronomy, by offering an opportunity to spend approximately six months working on an original, research and development (R&D) project in an industrial laboratory. It aims to provide students with valuable, practical experience and equip them particularly well for future jobs in industrial research and development.

The placements typically involve working on a project within an industrial laboratory from a specialist area of physics or related technology. Placements will usually be based in companies in or around Southampton, within easy commuting distance. This arrangement has several benefits from making practical arrangements easier, reducing settling in time, ensuring easy and effective routes for communication between all parties, to supporting links with local industry, which should also aid students in their further career options.

The typical duration of such placements is six months. They start during the Summer Vacation between Years 3 and 4 (typically in July) and last through Semester 1 of Year 4, finishing by Christmas of Year 4. January of Year 4 is mainly devoted to the preparation of a report and a presentation of the project results.

There may be some extra cost involved in the commuting costs during the placements. However, it is a common practice in industry in the UK that students on placements are employed on a short term contract basis, in a role called "Industrial Trainee" and therefore receive some financial remuneration for their work.

Academic staff from Physics and Astronomy will be available, not only for facilitating placements and the necessary preparation, but as continued support during the project. You will be jointly supervised by a member of academic staff and by a member of the host company. The academic supervisor will visit each student during their placement and will be available to offer advice either remotely or through a meeting.

Exit awards are only available under exceptional circumstances. Note that students must meet the standard criteria for progression to these awards before they can be granted. In the case of the CertHE and DipHE, core modules for the BSc Physics are treated as compulsory modules for the purpose of deciding whether progression to these awards has been accomplished.

Your contact hours will vary depending on your module/option choices. Full information about contact hours is provided in individual module profiles.

### **Learning and teaching**

Core knowledge and understanding is acquired substantially via lectures, supported by tutor-led tutorials, laboratory practical classes, problem classes as well as guided independent study and research. Students are strongly encouraged to attend all the lectures for the courses on which they are registered and are required to attend all the supporting sessions.

For the MPhys with Industrial Placement programme, these learning outcomes are achieved and enhanced through a dissertation, laboratory modules and a placement project.

### **Assessment**

Assessment in Years 1, 2 and 3 is through a mixture of unseen written examinations, marked problem sheets and laboratory work. In Years 2 and 3, while most of the assessment is still mainly by examination, it also includes reports and giving presentations. Semester 1 of Year 4 is assessed completely on the basis of the placement and no other courses are pursued. Semester 2 of Year 4 modules are mostly assessed by written examinations.

Assessment will be carried out through reports, presentation and viva voce examination. Compared to F303 MPhys Physics, the industrial placement is taken instead of four standard modules in semester 1. The performance on the placement (PHYS6027) is evaluated through assessment of the work carried out during the placement (35%), dissertation/project report summarising the work (45%) and a viva voce examination (20%). The industrial supervisor will provide an input and a report on a student's performance that will inform the grading of the project work during the placement.

## Special Features of the programme

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Students will formally join the Programme at the end of Part III, once accepted into placements and not before the 1st of July. Students who did not progress to Part IV by that date will be disqualified from the Programme.

**Please note:** As a research-led University, we undertake a continuous review of our programmes to ensure quality enhancement and to manage our resources. As a result, this programme may be revised during a student's period of registration; however, any revision will be balanced against the requirement that the student should receive the educational service expected. Please read our [Disclaimer](#) to see why, when and how changes may be made to a student's programme.

Programmes and major changes to programmes are approved through the University's [programme validation process](#) which is described in the University's [Quality handbook](#).

## Educational Aims of the Programme

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The aims of the programme are to: Overall, this programme aims to:

1. introduce you to the main areas of physics
2. support you in gaining in-depth understanding of the principles of physics
3. apply the core knowledge acquired during the first three years of undergraduate degree to the “real world”, industrial problems and challenges
4. develop further specialist knowledge, in the area of host company field, building on the physics background learnt earlier
5. appreciate interdisciplinary and intersectoral nature of science and its role in the industrial environment, providing insight and understanding of how physical concepts can be applied to provide technology solutions
6. increase awareness of how physics and other scientific subjects contribute to broader as well as local economy and to society, in general.
7. provide a solid base for a successful career as a physicist, and reinforce skills transferable to a wide range of other careers
8. reinforce problem solving skills and critical, quantitative data analysis
9. help to develop advanced and specialist laboratory skills using a range of physical techniques, as well as in related disciplines
10. provide you with some of the basic computing and numeracy skills necessary for further study and employment, including word-processing, data analysis and internet-based research;
11. enable you to develop computer programming skills and statistical techniques to support data analysis;
12. enhance key transferable skills such as personal organisation and teamwork
13. improve your capacity for self-study
14. develop further skills in giving presentation to a professional audience and balancing well the fundamental physics content and the applied side of a project
15. develop further your ability to identify, organise, critically analyse and communicate technical information and concepts through writing a report and a viva voce
16. introduce you to intellectual property and confidentiality issues related to carrying out industrial research and development work.

## Programme Learning Outcomes

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Having successfully completed this programme you will be able to demonstrate knowledge and understanding of:

### Knowledge and Understanding

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On successful completion of this programme you will have knowledge and understanding of:

- A1. mathematics required for the description of the physical world;
- A2. the breakdown of classical (19th century) physics and the revolution in physics at the beginning of the 20th century;
- A3. special relativity and its application in nuclear physics and high-energy particle scattering;
- A4. the quantitative description of oscillating systems and wave-motion;
- A5. Newtonian mechanics and its application to physical systems;
- A6. quantum theory, both from qualitative and quantitative (quantum mechanics) viewpoints;
- A7. application of quantum theory to describe the structure of atoms and nuclei;
- A8. the laws of thermodynamics and their consequences for the behaviour of physical systems;
- A9. statistical mechanics as a basis for the microscopic description of thermodynamic systems;
- A10. electricity, magnetism and their unification through the laws of electromagnetism;
- A11. the application of electromagnetism to the description of electromagnetic waves and optics;
- A12. advanced classical and quantum mechanics and electromagnetism;
- A13. quantum theory applied to relativistic systems
- A14. specific topics selected for a dissertation and a project carried out in a professional and industrial environment

### **Teaching and Learning Methods**

The topics listed in skills A1–A18 are taught mainly via lectures, directed reading and laboratory work as part of the core modules associated with this programme. Learning is reinforced via tutorials (in Part I), project work (particularly in the final year project), coursework and problems classes.

### **Assessment Methods**

The topics listed in skills A1–A18 are assessed via a range of assessment methods. Assessment in the first and second year is a mixture of unseen written examinations, marked problem-based coursework and laboratory work. In the third year assessment is mainly by examination, although laboratory-based, computer-based and dissertation modules will use different assessment methods, as appropriate. In the fourth year of the Mphys programmes, laboratory work is replaced by a project which involves continuous assessment, written reports and an oral examination.

### **Subject Specific Intellectual and Research Skills**

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On successful completion of this programme you will be able to:

- B1. apply knowledge of physics to the solution of theoretical and practical physical problems;

- B2. apply mathematical techniques in algebra, vectors, calculus and differential equations to the solution of physical problems;
- B3. Program and use computers to assist in the solution of physical problems;
- B4. interpret data using statistical techniques, physics insight and background knowledge and making decisions taking into account experimental errors.

### **Teaching and Learning Methods**

Problem solving (items B1-B3) is at the heart of physics, and so it is emphasized throughout the learning and teaching experience, in lectures, coursework and problem classes. Mathematics skills (item B2) are developed via core maths modules in Part I and the use the techniques learned there in physics core modules in Parts I-III. Computer skills (item B3) are developed via a core Part I computing module, and part of the core laboratory module (PHYS2022) in Part II. They can also be developed via optional modules (e.g, PHYS6017) and are often developed further and exploited in final year projects. Data analysis, interpretation and associated decision making (item B4) are developed initially in PHYS1201 and then via core laboratory modules in Parts I and II, but also developed further and reinforced in the final year, industrial R&D project, which is also core.

### **Assessment Methods**

Problem solving and mathematical skills are assessed mostly via written examinations, but also via assessed coursework, especially in Parts I and II of the programme. Problem-solving, in particular, is also a key aspect of the final year project, which is assessed via supervisor's judgment of research work, a written report and an oral examination. The computing part of the core laboratory module in Part II is assessed via practical exercises. Data interpretation and related decision making are assessed via practical work, vivas and presentations in the Part 1-3 laboratory modules. They are also assessed implicitly in many/most final year projects.

### **Transferable and Generic Skills**

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On successful completion of this programme you will be able to:

- C1. communicate physical ideas in written form;
- C2. recognise the value of numeracy in the precise statement of ideas;
- C3. prepare and give an oral presentation using visual aids;
- C4. Prepare a scientific report using appropriate computer tools for document preparation, data analysis and graphical display;
- C5. use information from a variety of sources including scientific journals, books and the internet;
- C6. manage a project with due attention to time and resource management;
- C7. work successfully as a team member.

### **Teaching and Learning Methods**

Skill C1 is covered mainly via self-study (with help and feedback available) in the Physics Skills/Physics from Evidence lab modules (via write-ups), in the final year project (which is partly assessed via a written report), and (for the MPhys) the dissertation module. Skill C2 is embedded throughout the curriculum, with practical applications in experimental and project work. Skill C3 is covered the Part II Physics from Evidence laboratory module, which includes a “conference” component, during which students give an assessed presentation on your laboratory work at a mock scientific conference. It is also covered (for MPhys students) in the dissertation module, which includes a presentation associated with the teamwork component. Skill C4 is covered in laboratory and project work, as well as the dissertation module (for MPhys students). Skill C5 is covered by the final year project, as well as the dissertation module (for MPhys students). Skill C6 is developed especially during the final year project, but also during the dissertation module (for Mphys students). Skill C7 is developed during all lab modules (which typically are done in pairs), during the final year project (again, this is usually done in pairs), and particularly during the dissertation module (which includes a team work component).

### **Assessment Methods**

Skill C1 is assessed with written reports on experimental work in laboratory modules, via the written report required for the final year project, and (for the MPhys) via the written report required for the dissertation module. Skill C2 is assessed in a variety of ways throughout the programme – it is an ingredient in everything from formal exams, to oral examinations, to written reports and presentations. Skill C3 is assessed via a presentation students give during a mock scientific conference which is part of the Part II Physics from Evidence laboratory module. Skill C4 is assessed in the marking of all written coursework and reports, such as laboratory and project work, and also the report for the dissertation module (for MPhys students). Skill C5 is assessed as an explicit component in the mark scheme for the final year project report, and also in the report for the dissertation module (for MPhys students). Skill C6 is assessed primarily via the supervisor's mark on the final year project performance, but of course also via the report on the project (and, for MPhys students) the dissertation module. For MPhys students, skill C7 is assessed explicitly via the team work component of the final year project. The mark for this is assigned by the module coordinator, but takes into account team members assessment of each other's contribution. For the final year project, team work can also be a factor in a supervisor's assessment for the final year project.

### **Subject Specific Practical Skills**

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On successful completion of this programme you will be able to:

- D1. use standard laboratory apparatus for physical measurements;
- D2. use computers for the acquisition, storage, and analysis of data;

### **Teaching and Learning Methods**

Skill D1 is developed and assessed primarily via the core laboratory modules in Parts I and II and is often also assessed through the industrial project. The fundamentals for skill D2 are introduced in a core Part I module (PHYS1201) and assessed via coursework.

Skill D2 is further developed and assessed during the laboratory modules, especially the Part II Physics from Evidence module, which includes a computing component. This skill is frequently assessed as a

part of the industrial project.

### Assessment Methods

Laboratory skills are assessed from laboratory notebooks, by the writing of lab papers/reports, and by conference presentations.

## Programme Structure

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The programme structure table is below:

Information about pre and co-requisites is included in individual module profiles.

Where optional modules have been specified, the following is an indicative list of available optional modules, which are subject to change each academic year. Please note in some instances modules have limited spaces available.

### Part I

The following structure assumes entry via the MPhys programme.

It should be noted that it may not be possible to run some optional modules if the number of students registered on the module is very small. It should also be noted that optional module choice can be restricted by the University Timetable, which varies from year to year: some optional modules may clash with other optional or compulsory modules. Please be aware that many modules are shared between different cohorts; the class size depends on cohort size, which varies from year to year.

The following structure assumes entry via the MPhys programme.

The information in this programme specification is accurate at the time of writing, but may change in minor ways from year to year due to staff availability or other factors. Some of these modules are subject to pre-requisites and exclusions that, for brevity, are not given here; this information is available in the module specifications on the Physics & Astronomy Undergraduate Teaching website.

Core modules must be taken and passed before progression to next level or award.

Compulsory modules must be taken before progression to next level or award.

### Part I Core

You will take one optional module plus the following core modules:

| Code | Module Title | ECTS | Type |
|------|--------------|------|------|
|------|--------------|------|------|

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|          |   |     |      |
|----------|---|-----|------|
| PHYS1022 | Electricity and Magnetism                       | 5   | Core |
| PHYS1013 | Energy and Matter                               | 5   | Core |
| MATH1006 | Mathematical Methods for Physical Scientists 1a | 7.5 | Core |
| MATH1007 | Mathematical Methods For Physical Scientists 1b | 7.5 | Core |
| PHYS1015 | Motion and Relativity                           | 5   | Core |
| PHYS1201 | Physics Skills - Programming and Data Analysis  | 7.5 | Core |
| PHYS1017 | Physics Skills 1                                | 5   | Core |
| PHYS1019 | Physics Skills 2                                | 5   | Core |
| PHYS1011 | Waves, Light and Quanta                         | 5   | Core |

### Part I Optional

You will be able to select 7.5 ECTS/15 CATS of optional modules in semester 1. These can include broadening options (LANGXXXX, UOSMXXXX, etc.) that may be chosen from the list of modules provided in the programme catalogue (online option choice system).

| Code     | Module Title                                | ECTS | Type     |
|----------|---|------|----------|
| PHYS1005 | Introduction to Astronomy and Space Science | 7.5  | Optional |
| PHYS1004 | Introduction to Photonics                   | 7.5  | Optional |
| PHYS1203 | Linear Algebra for Physics                  | 7.5  | Optional |

### Part II

#### Part II Core

You will take TWO optional modules plus the following core modules:

| Code     | Module Title        | ECTS | Type |
|----------|---------------------|------|------|
| PHYS2006 | Classical Mechanics | 7.5  | Core |

|          |                         |     |      |
|----------|-------------------------|-----|------|
| PHYS2001 | Electromagnetism        | 7.5 | Core |
| PHYS2022 | Physics from Evidence I | 7.5 | Core |
| PHYS2003 | Quantum Physics         | 7.5 | Core |
| PHYS2024 | Statistical Mechanics   | 7.5 | Core |
| PHYS2023 | Wave Physics            | 7.5 | Core |

### Part II Optional

You will be able to select 7.5 ECTS/15 CATS of optional modules per semester. These can include broadening options (LANGXXXX, UOSMXXXX, etc.) that may be chosen from the list of modules provided in the programme catalogue (online option choice system).

| Code     | Module Title  | ECTS | Type     |
|----------|---|------|----------|
| PHYS3019 | Communicating and Teaching and The Undergraduate Ambassadors Scheme | 7.5  | Optional |
| PHYS2013 | Galaxies  | 7.5  | Optional |
| PHYS2015 | Introduction to Energy in The Environment                           | 7.5  | Optional |
| PHYS2031 | Introduction to the Nanoworld                                       | 7.5  | Optional |
| PHYS2007 | Medical Physics   | 7.5  | Optional |
| PHYS2009 | Practical Photonics   | 7.5  | Optional |

### Part III

#### Part III Core

You will take 7.5 ECTS/15 CATS of optional modules per semester and the following Core modules

| Code     | Module Title   | ECTS | Type |
|----------|----------------|------|------|
| PHYS3008 | Atomic Physics | 7.5  | Core |

|          |                                    |     |      |
|----------|------------------------------------|-----|------|
| PHYS3004 | Crystalline Solids                 | 7.5 | Core |
| PHYS6009 | Dissertation                       | 7.5 | Core |
| PHYS3002 | Nuclei and Particles               | 7.5 | Core |
| PHYS3007 | Theories of Matter, Space and Time | 7.5 | Core |

### Part III Optional

You will be able to select 7.5 ECTS/15 CATS of optional modules per semester. These can include broadening options (LANGXXXX, UOSMXXXX, etc.) that may be chosen from the list of modules provided in the programme catalogue (online option choice system).

| Code     | Module Title  | ECTS | Type     |
|----------|---|------|----------|
| PHYS6003 | Advanced Quantum Physics  | 7.5  | Optional |
| PHYS3009 | Applied Nuclear Physics   | 7.5  | Optional |
| PHYS6012 | Coherent Light, Coherent Matter                                     | 7.5  | Optional |
| PHYS3019 | Communicating and Teaching and The Undergraduate Ambassadors Scheme | 7.5  | Optional |
| PHYS6005 | Cosmology   | 7.5  | Optional |
| PHYS2013 | Galaxies  | 7.5  | Optional |
| PHYS2015 | Introduction to Energy in The Environment                           | 7.5  | Optional |
| PHYS6024 | Lasers  | 7.5  | Optional |
| PHYS2007 | Medical Physics   | 7.5  | Optional |
| PHYS6014 | Nanoscience: technology and advanced materials                      | 7.5  | Optional |
| PHYS6011 | Particle Physics  | 7.5  | Optional |
| PHYS3011 | Photons in Astrophysics   | 7.5  | Optional |

|          |                      |     |          |
|----------|----------------------|-----|----------|
| PHYS2009 | Practical Photonics  | 7.5 | Optional |
| PHYS6004 | Space Plasma Physics | 7.5 | Optional |
| PHYS3010 | Stellar Evolution    | 7.5 | Optional |

### Part III Optional Compulsory

Please select one of the following modules:

| Code     | Module Title                   | ECTS | Type       |
|----------|--------------------------------|------|------------|
| PHYS6017 | Computer Techniques in Physics | 7.5  | Compulsory |
| PHYS6008 | Physics from Evidence II       | 7.5  | Compulsory |

### Part IV

#### Part IV Compulsory

| Code     | Module Title                          | ECTS | Type       |
|----------|---------------------------------------|------|------------|
| PHYS6015 | MPhys Final Year Synoptic Examination | 7.5  | Compulsory |

#### Part IV Core

| Code     | Module Title                               | ECTS | Type |
|----------|--|------|------|
| PHYS6027 | R&D Project for MPhys Industrial Placement | 30   | Core |

#### Part IV Optional

You will be able to select 22.5 ECTS/45 CATS of optional modules in semester 2. These can include broadening options (LANGXXXX, UOSMXXXX, etc.) that may be chosen from the list of modules provided in the programme catalogue (online option choice system).

| Code     | Module Title                                     | ECTS | Type     |
|----------|--|------|----------|
| PHYS3009 | Applied Nuclear Physics                          | 7.5  | Optional |
| PHYS3019 | Communicating and Teaching and The Undergraduate | 7.5  | Optional |

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## Ambassadors Scheme

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|          |  |     |          |
|----------|--|-----|----------|
| PHYS6014 | Nanoscience: technology and advanced materials | 7.5 | Optional |
| PHYS6011 | Particle Physics                               | 7.5 | Optional |
| PHYS6071 | Physics of the Early Universe                  | 7.5 | Optional |
| PHYS6004 | Space Plasma Physics                           | 7.5 | Optional |
| PHYS3010 | Stellar Evolution                              | 7.5 | Optional |

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## Progression Requirements

The programme follows the University's regulations for [\*Progression, Determination and Classification of Results : Undergraduate and Integrated Masters Programmes\*](#) and [\*Progression, Determination and Classification of Results: Postgraduate Master's Programmes\*](#) Any exemptions or variations to the University regulations, approved by AQSC are located in [\*section VI of the University Calendar\*](#).

## Support for student learning

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There are facilities and services to support your learning some of which are accessible to students across the University and some of which will be geared more particularly to students in your particular Faculty or discipline area.

The University provides:

- library resources, including e-books, on-line journals and databases, which are comprehensive and up-to-date; together with assistance from Library staff to enable you to make the best use of these resources
- high speed access to online electronic learning resources on the Internet from dedicated PC Workstations onsite and from your own devices; laptops, smartphones and tablet PCs via the Eduroam wireless network. There is a wide range of application software available from the Student Public Workstations.
- computer accounts which will connect you to a number of learning technologies for example, the Blackboard virtual learning environment (which facilitates online learning and access to specific learning resources)
- standard ICT tools such as Email, secure filestore and calendars.
- access to key information through the MySouthampton Student Mobile Portal which delivers timetables, Module information, Locations, Tutor details, Library account, bus timetables etc. while you are on the move.
- IT support through a comprehensive website, telephone and online ticketed support and a dedicated helpdesk in the Hartley Library.
- Enabling Services offering support services and resources via a triage model to access crisis management, mental health support and counselling. Support includes daily Drop In at Highfield campus at 13.00 – 15.00 (Monday, Wednesday and Friday out of term-time) or via on-line chat on weekdays from 14.00 – 16.00. Arrangements can also be made for meetings via Skype.
- assessment and support (including specialist IT support) facilities if you have a disability, long term health problem or Specific Learning Difficulty (e.g. dyslexia).
- the Student Services Centre (SSC) to assist you with a range of general enquiries including financial matters, accommodation, exams, graduation, student visas, ID cards
- Career and Employability services, advising on job search, applications, interviews, paid work, volunteering and internship opportunities and getting the most out of your extra-curricular activities alongside your degree programme when writing your CV
- Other support that includes health services (GPs), chaplaincy (for all faiths) and 'out of hours' support for students in Halls and in the local community, (18.00-08.00)
- A Centre for Language Study, providing assistance in the development of English language and study skills for non-native speakers.

The Students' Union provides

- an academic student representation system, consisting of Course Representatives, Academic Presidents, Faculty Officers and the Vice-President Education; SUSU provides training and support for all these representatives, whose role is to represent students' views to the University.
- opportunities for extracurricular activities and volunteering
- an Advice Centre offering free and confidential advice including support if you need to make an academic appeal
- Support for student peer-to-peer groups, such as Nightline.

Associated with your programme you will be able to access:

- All students have a personal tutor, with whom they meet regularly, particularly during the first year where small group tutorials are used to discuss the core physics courses and associated coursework/problem sheets. Tutors offer help on both academic matters, such as choice of option courses, and on pastoral matters.
- The Year Directors of Studies, the Director of Programmes, as well as the Senior Tutor are available to give help and advice as required.
- One of the primary functions of the Faculty Office is student support and guidance. The Faculty Office is able to provide information on wide range of topics, including programme regulations, special consideration procedures, appeals, and much more.
- The student physics society Physoc organizes a “parenting” scheme in which all new arrivals are looked after by senior physics students. Physoc also runs an academic mentoring scheme that aims to provide academic tutoring, help and advice for students by students.
- In the first and second year, each core module has an associated compulsory problems class where demonstrators provide individual help on the course material and/or coursework;
- Students normally work in pairs on final year projects, which are supervised by a member of academic staff who is likely to be an internationally respected expert.
- Most modules provide printed lecture notes that are either distributed or are available online.
- Key transferable skills are embedded throughout our courses, particularly those which contain coursework or laboratory work.
- Provision is made for any student who specifically wishes to consult a female member of staff.
- We are proud of the friendly atmosphere in Physics & Astronomy. Members of staff are happy to be approached for help. The Faculty Office also provides support for students throughout their programmes.

## Methods for evaluating the quality of teaching and learning

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You will have the opportunity to have your say on the quality of the programme in the following ways:

- Completing student evaluation questionnaires for each module of the programme.
- Acting as a student representative on various committees, e.g. Staff/Student Liaison Committees, School Programmes Committee OR providing comments to your student representative to feedback on your behalf.
- Serving as a student representative on Faculty Scrutiny Groups for programme validation.
- Taking part in programme validation meetings by joining a panel of students to meet with the Faculty Scrutiny Group.

Further details on the University's quality assurance processes are given in the [Quality Handbook](#).

## Career Opportunities

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We believe in helping our students gain the necessary experience for a future career, along with the skills to identify opportunities and make the most of them. At Southampton, you will have the opportunity to broaden your options by meeting employers, getting involved in volunteering activities, work placements and much more.

We work hard to help our students enter exciting careers. Our Academic Careers Team, supported by our student society (PHYSOC), put on over 40 hours a year of careers advice ranging from helping you write your CV, to advice on how to set up a small business, to mock interviews supported by real companies. We work with our students to find them placements and internships, which will help them to gain valuable work experience, preparing them for employment when they graduate. In 2012, 86% of our students began a career within six months of graduating.

We offer our top performing students to chance to join one of our flagship programmes, which allows them to work at research centres in leading Universities overseas, such as Harvard University, or for world renowned

research centres such as CERN, where scientists recently discovered the Higgs Boson. One of the flagship programmes, the MPhys with Industrial Placement, provides students with the opportunity to spend a full semester working on physics-related topics in a company.

We are part of South East Physics Network (SEPNet,) who we work with to organise eight-week paid internships for our students during the summer vacation. In previous years, students have been placed with a wide range of organisations, including The National Physical Laboratory, BMW, The Met Office, SELEX Galileo, QinetiQ, the Culham Centre for Fusion Energy. As well as offering employment opportunities, these companies offer advice to our students about how to become more competitive in the work place.

SEPNet has a dedicated Careers Adviser who our students can liaise with. We work with SEPNet to offer our students the chance to attend 'meet the employer' days as well as careers talks with speakers from industry.

## External Examiner(s) for the programme

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Name: Professor Simon Cornish - Durham University

Name: Professor Haley Gomez - University of Cardiff

Students must not contact External Examiner(s) directly, and external examiners have been advised to refer any such communications back to the University. Students should raise any general queries about the assessment and examination process for the programme with their Course Representative, for consideration through Staff: Student Liaison Committee in the first instance, and Student representatives on Staff: Student Liaison Committees will have the opportunity to consider external examiners' reports as part of the University's quality assurance process.

External examiners do not have a direct role in determining results for individual students, and students wishing to discuss their own performance in assessment should contact their Personal Academic Tutor in the first instance.

**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 they take full advantage of the learning opportunities that are provided. More detailed information can be found in the programme handbook.

## Appendix 1:

Students are responsible for meeting the cost of essential textbooks, and of producing such essays, assignments, laboratory reports and dissertations as are required to fulfil the academic requirements for each programme of study. In addition to this, students registered for this programme also have to pay for:

### Additional Costs

| Type   | Details   |
|--|---|
| Approved Calculators                           | Candidates may use calculators in the examination room only as specified by the University and as permitted by the rubric of individual examination papers. The University approved models are Casio FX-570 and Casio FX-85GT Plus. These may be purchased from any source and no longer need to carry the University logo.   |
| Placements (including Study Abroad Programmes) | PHYS6027<br>Accommodation: Please note that students are required to pay for their accommodation costs.<br>Insurance: Please note that students are responsible for their own vehicle insurance cost if applicable.<br>Travel costs: Please note that students are required to pay for their travel costs to and from the schools they work with during the module.   |
| Printing and Photocopying Costs                | In the majority of cases, coursework such as essays; projects; dissertations is likely to be submitted on line. However, there are some items where it is not possible to submit on line and students will be asked to provide a printed copy.  |
| Stationery                                     | You will be expected to provide your own day-to-day stationary items, e.g. pens, pencils, notebooks, etc). Any specialist stationery items will be specified under the Additional Costs tab of the relevant module profile.   |
| Textbooks                                      | Where a module specifies core texts these should generally be available on the reserve list in the library. However due to demand, students may prefer to buy their own copies. These can be purchased from any source.<br><br>Some modules suggest reading texts as optional background reading. The library may hold copies of such texts, or alternatively you may wish to purchase your own copies. Although not essential reading, you may benefit from the additional reading materials for the module. |

In some cases you'll be able to choose modules (which may have different costs associated with that module) which will change the overall cost of a programme to you. Details of such costs will be listed in the Module Profile. Please also ensure you read the section on additional costs in the University's Fees, Charges and Expenses Regulations in the University Calendar available at [www.calendar.soton.ac.uk](http://www.calendar.soton.ac.uk).