

## PROGRAMME SPECIFICATION

This document describes the **MSc in Physics (Euro Masters)** programme offered in the Physics Department. This specification is valid for new entrants from **September 2020**.

This is a two-year programme designed to conform to the highest European (and international) standards.

The aims of the programme are:

- to equip students for future careers, in the UK and internationally, including research in universities, industry and other organisations;
- provide a technical background for a broader range of careers in the industrial scientific instrument sector and elsewhere;
- develop an advanced knowledge of a chosen area of contemporary physics via lecture courses;
- obtain training in research techniques through lecture courses, directed study, and an individual project;
- develop key skills relevant for a postgraduate science student.

Upon successful completion of the programme students will be well-prepared for doctoral research in the best universities around the world.

The Department has close links with major external scientific organisations, including Rutherford Appleton Laboratory, the Harwell Science and Innovation Campus (including ISIS neutron spallation source and DIAMOND synchrotron x-ray scattering facility), the National Physical Laboratory, CERN, major employers of science graduates and other academic, commercial and scientific institutions. An important element of this programme, which ensures its wider relevance, involves external involvement in the programme. This entails:

- input on the course content;
- collaborative projects (some projects may involve time spent at these collaborators)
- visits to industrial facilities and laboratories;
- guest lectures.

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This document provides a summary of the main features of the programme(s), and of the outcomes which a student might reasonably be expected to achieve if full advantage is taken of the learning opportunities provided. Further information is contained in the College prospectus, the College Regulations and in various handbooks issued to students upon arrival. Whilst Royal Holloway keeps all its information for prospective applicants and students under review, programmes and the availability of individual courses are necessarily subject to change at any time, and prospective applicants are therefore advised to seek confirmation of any factors which might affect their decision to follow a specific programme. In turn, Royal Holloway will inform applicants and students as soon as is practicable of any substantial changes which might affect their studies.

### Learning outcomes

Teaching and learning in the programme are closely informed by the active research of staff. In general terms, the programme provides opportunities for students to develop and demonstrate the following learning outcomes:

### *Knowledge and understanding:*

- a systematic understanding of knowledge, and a critical awareness of current problems and/or new insights, much of which is at, or informed by, the forefront of the discipline;
- a comprehensive understanding of techniques applicable to their own research or advanced scholarship;
- originality in the application of knowledge, together with a practical understanding of how established techniques of research and enquiry are used to create and interpret knowledge in the discipline.

### *Skills and other attributes*

- problem-solving skills – applied in new or unfamiliar environments;\*
- learning skills – including self-directed and autonomous study;\*
- investigative skills;\*
- information retrieval skills;\*
- communication skills – to both specialists and non-specialists;\*
- analytical skills;\*
- IT skills;\*
- personal skills such as teamwork and independence.\*
- In addition, as a result of carrying out the research project students should develop research skills using a mix of experimental, theoretical and computational techniques appropriate to the field together with related transferable skills. The project will provide students with an opportunity for originality in developing and applying their ideas. Students should develop their communication skills and apply them to the writing of the project report and the presentation of an oral report on the project.

\* transferable skills

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### **Teaching, learning and assessment**

A variety of teaching methods will be used, including lectures, directed study, seminars and one-on-one sessions. Assessment is based on the Project thesis, course examinations and coursework. Full details of the assessments for individual courses can be obtained from the [Department](#).

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### **Details of the programme structure(s)**

Please note that not all optional courses run each year. A full list of optional courses for the current academic year can be obtained from the [Department](#).

The programme consists of a taught first year, which incorporates a significant research project and research skills training element. This is followed by a research year at Royal Holloway, with a choice of research training courses.

### **Year 1**

Students must take

PH5100 Major Project (15ECTS/30 credits) Non condonable

and choose six optional courses to the value of 45ECTS/90 credits. Listed below are some of the options that are likely to be available

The Project in year 1 is in a research area of a member of academic staff in the Department. The lecture courses are chosen from those given in the Intercollegiate MSci Handbook at <https://qplus.qmul.ac.uk/course/view.php?id=6054#>. The course choice should be made before the beginning of the programme with advice from the MSci co-ordinator.

## Year 2

This is a research year and students take PH5500 Research Project (60 ECTS/120 credits). PH5500 is non condonable.

As part of their Research Project, students may also participate in research training on topics related to the project, through directed study, seminars and lectures. There will be no formal examinations in these courses. Progress will be assessed by coursework and seminar participation.

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### Progression and award requirements

Students leaving after completion of the first year will be awarded a Postgraduate Diploma in Physics (PGDip Physics) from RHUL.

To pass the PGDip programme a student must achieve an overall weighted average of at least 50.00. Failure marks between 40-49% are not usually condoned for the award of a Postgraduate Diploma, but if they are, such condoned fails would be in courses which do not constitute more than 40 credits, provided that the overall weighted average is at least 50.00%, but a failure mark (i.e. below 50%) in PH5100 cannot be condoned.

The PGDip degree with Merit may be awarded if a student achieves an overall weighted average of 60.00% or above.

The PGDip degree with Distinction may be awarded if a student achieves an overall weighted average of 70.00% or above.

In order to progress from the first to the second year of this MSc programme a student must achieve the standard of a PGDip in their first year. Students must pass the Project. Students must pass at least four of the taught courses (60 credits), with a minimum of 40-49% in the remaining two courses (30 credits) with an average of at least 50.00% over the six courses taken. Progressing students have the option to re-sit or re-take failed courses.

To pass the MSc programme a student must achieve an overall weighted average of at least 50.00. Failure marks between 40-49% can be condoned in taught courses which do not constitute more than 40 credits, provided that the overall weighted average is at least 50.00%, but a failure mark (i.e. below 50%) in the Research and Major Projects cannot be condoned

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### Student support and guidance

- The Programme Director holds an induction meeting for all new postgraduate students in the first week of the programme.
- The Programme Director provides primary support for each student, including overall personal and academic welfare.
- The Project Supervisor provides additional academic support. Teachers of the lecture courses monitor progress on the courses.
- Representation on the Student-Staff Committee.
- Detailed PG handbook and course booklets.
- Extensive supporting materials and learning resources in College and University libraries, as well as the Computer Centre.
- College Careers Service and Departmental Employability Lead Officer.
- Access to all College and University support services, including Student Counselling Service, Health Centre, Students' Union and students with additional learning needs also have access to Disability and Dyslexia Services (ESO).
- Postgraduate seminars and meetings, research colloquia, Physics Society meetings and parties.

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## Admission requirements

For details of admissions requirements please refer to the [Course Finder](#).

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## Further learning and career opportunities

This programme provides an ideal grounding for students to pursue PhD programmes in universities, and to equip them for future research careers in universities, industry and other organisations in Europe and around the world. The programmes will also provide a technical background for a broader range of careers in the industrial scientific instrument sector and elsewhere around the world. For more details on further learning and career opportunities please refer to the [Careers Service](#).

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## Indicators of quality and standards

Royal Holloway's position as one of the UK's leading research-intensive institutions was confirmed by the results of the most recent Research Excellence Framework (REF 2014) conducted by the Higher Education Funding Council (HEFCE). The scoring system for the REF 2014 measures research quality in four categories, with the top score of 4\* indicating quality that is world-leading and of the highest standards in terms of originality, significance and rigour and 3\* indicating research that is internationally excellent. 81% of the College's research profile was deemed to be within the 4\* or 3\* categories, an increase of over 20% since 2008. This results for the quality of our research outputs placed Royal Holloway 15<sup>th</sup> in the UK based on an overall Grade Point Average (GPA) score and 20<sup>th</sup> in the UK for 4\* and 3\* research. The Department of Physics is ranked 35 in the UK for research of 4\* standard and 34 for 3\* and 4\* research.

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## List of programmes

The course is taught by staff at Royal Holloway, in conjunction with staff from other colleges of the University of London for some of the taught modules. The Masters leads to an award of the University of London. The Postgraduate Diploma leads to an award of Royal Holloway and Bedford New College. Postgraduate programmes in Physics are not subject to accreditation by a professional body. The Banner programme codes are given in parentheses.

- MSc in Physics (Euro Masters) (2441)
- PG Diploma Physics (3078)

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