

Programme Title: MSc Physics



## Programme Specification

Awarding Body/Institution	Queen Mary University of London
Teaching Institution	Queen Mary University of London
Name of Final Award and Programme Title	MSc Physics
Name of Interim Award(s)	
Duration of Study / Period of Registration	1 calendar year
QM Programme Code / UCAS Code(s)	PMSF-QMPHYS1
QAA Benchmark Group	
FHEQ Level of Award	Level 7
Programme Accredited by	
Date Programme Specification Approved	18 January 2018
Responsible School / Institute	School of Physics and Astronomy

Schools which will also be involved in teaching part of the programme

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Institution(s) other than Queen Mary that will provide some teaching for the programme

University College London, Kings College London and Royal Holloway, University of London

Disclaimer: The availability of modules offered by KCL, UCL and RHUL are outside of QMUL's control and we cannot guarantee that all modules will be running each year.

### Programme Outline

This is a one calendar year full-time MSc in Physics consisting of three streams: Theoretical Physics, Particle Physics and Condensed matter Physics. Although the streams are mainly distinguished by the 60 credit MSc project, there are also compulsory modules specified for each stream (see Programme structure section).

### Aims of the Programme

The purpose of this programme is manifold:

To allow students holding a (generic, e.g. BSc Physics) first degree to specialise in a particular area of Physics (as defined by each stream).

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To train graduates in research skills suitable for both further (post-graduate research) studies and employment (e.g. industrial research).  
To enable students who did not gain a sufficiently high first degree classification (e.g. a lower second class degree) to continue with postgraduate studies.

**What Will You Be Expected to Achieve?**

Students successfully completing the programme will:

**Academic Content:**

A 1	Know the fundamental laws and physical principles, along with their applications, in a specific area of physics.
A 2	Manage their own research, making use of journal articles and other primary sources.
A 3	Communicate complex scientific ideas, concisely, accurately and informatively.
A 4	Use mathematical analysis to model physical behaviour and interpret the mathematical descriptions of physical phenomena.

**Disciplinary Skills - able to:**

B 1	To solve advanced problems in physics using appropriate mathematical tools (to order of magnitude or more precisely as appropriate).
B 2	To plan and execute an investigation and to critically analyse the results, drawing valid conclusions.
B 3	To prepare a detailed technical report on their project and compare their results with published data ,expected outcomes or theoretical predictions.
B 4	To identify relevant physical principles and translate problems into mathematical statements.

**Attributes:**

C 1	Acquire and apply knowledge in a rigorous way
C 2	Explain and argue clearly and concisely
C 3	Connect ideas and information within their field of study
C 4	Critically evaluate the reliability of different sources of information
C 5	Acquire substantial bodies of new knowledge

QMUL Model Learning Outcomes - Level 4:

D 1

D 2

D 3

### How Will You Learn?

The majority of taught modules consist of three hour lecture blocks, with some modules incorporating substantial computer laboratory sessions. The project is undertaken within one of the three relevant research groups and uses computational, theoretical or laboratory methods as appropriate and may well involve additional, technical training. In all cases the project involves weekly one to one meetings with the supervisor.

### How Will You Be Assessed?

The majority of taught modules are assessed by a final examination (typically 90% of the final mark) and by coursework (typically 10% of the final mark), although individual module mark schemes may vary from this. The compulsory MSc Physics project is assessed by the final written report (60% of the final mark), a student presentation and oral examination (30% of the final mark) and performance during the project (10% of the final mark).

### How is the Programme Structured?

Please specify the full time and part time programme diets (if appropriate).

For all three streams the programme consists of 120 credits of taught modules (chosen from the list of approved modules) taken during semesters 1 and 2 (and examined during the May/June examination period) and a compulsory 60 credit MSc Physics Research Project (SPA7012P) undertaken during semesters 2 and 3. The choice of MSc project determines the stream (Theoretical Physics, Particle Physics or Condensed Matter Physics), corresponding to the research group where the project is undertaken. In addition to the project determining the stream, there are compulsory taught modules within each stream, namely:

Theoretical Physics

Semester A

SPA7018P Relativistic Waves & Quantum Fields

Particle Physics

Semester A

SPA7018P Relativistic Waves & Quantum Fields

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Semester B

SPA7001P Advanced Quantum Field Theory

Condensed Matter Physics

Semester A

SPA7013P Phase Transitions

Semester B

SPA7008P Electronic Structure Methods

Students can pick from any of the level 7, 15 credit elective modules to the total of 120 credits:

INK7022P Mathematical Methods for Theoretical Physics

INK7020P Lie Groups and Lie Algebras

INR7007P Statistical Mechanics

SPA7013P Phase Transitions

INU7001P Advanced Quantum Theory

INU7067P Advanced Topics in Statistical Mechanics

SPA7018P Relativistic Waves & Quantum Fields

SPA7001P Advanced Quantum Field Theory

SPA7024P Functional Methods in Quantum Field Theory

SPA7031P Differential Geometry in Theoretical Physics

INU7071P Galaxy Dynamics, Formation and Evolution

INU7056P Advanced Physical Cosmology

INU7003P Atom and Photon Physics

INK7048P Advanced Photonics

INU7022P Quantum Computation and Communication

INR7015P Quantum Electronics of Nanostructures

INU7014P Molecular Physics

INU7017P Particle Physics

INR7003P Particle Accelerator Physics

INK7066P Modelling Quantum Many-Body Systems

INU7016P Order and Excitations in Condensed Matter

INK7037P Theoretical Treatments of Nano-systems

INR7012P Physics at the Nanoscale

SPA7008P Electronic Structure Methods

INR7008P Superfluids, Condensates and Superconductors

INK7067P Advanced Condensed Matter

INK7032P Standard Model Physics and Beyond

INR7002P Nuclear Magnetic Resonance

INR7014P Statistical Data Analysis

INK7034P String Theory and Branes

INK7054P Supersymmetry

SPA7023P Stellar Structure and Evolution

SPA7005P Cosmology

SPA7019P Relativity and Gravitation

SPA7006P Electromagnetic Radiation in Astrophysics

INU7045P Planetary Atmospheres

INU7008P Solar Physics

SPA7022P Solar System

SPA7010P The Galaxy

SPA7004P Astrophysical Plasmas

INU7026P Space Plasma and Magnetospheric Physics

SPA7009P Extrasolar Planets & Astrophysical Discs

INK7051P Environmental Remote Sensing

INU7013P Molecular Biophysics

INK7068P Cellular Biophysics

INK7001P Theory of Complex Networks

INK7002P Equilibrium Analysis of Complex Systems

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INK7004P Dynamical Analysis of Complex Systems  
INK7005P Mathematical Biology  
INK7003P Elements of Statistical Learning  
SPA7028P Advanced Cosmology  
SPA7029P Collider Physics  
SPA7031P Supersymmetric Methods in Theoretical Physics  
INR7018P Computer Simulation in Condensed Matter  
INK7069P Dark Matter and Dark Energy  
SPA7032P Introduction to Strings and Branes (N.B. From September 2018)  
INU7089P Physical Models of Life  
Plus any new level 7 modules belonging to SPA and the intercollegiate programme.

### QMUL Model

Students are required to undertake the equivalent of one module (15 credits in 2017/18) per year of study which has been identified as meeting the requirements of the QMUL Model. Each of these modules has been designed to combine the best of QMUL's academic excellence with your ability to identify and develop your skills, networks and experience. This will help to ensure you become a graduate who can undertake further study or secure graduate employment in areas that interest you, and will support your ability to position yourself to find the right job or opportunity for you. The relevant module for your first year of study in 2017/18 is indicated below.

Where more than one module is specified, this is because pertinent elements from these modules have been identified as being appropriate to the QMUL Model and when studied together, deliver the equivalent content of one 15-credit QMUL Model module.

The QMUL Model modules for future years and associated Learning Outcomes will be identified as your studies continue.

Should Professional, Statutory and Regulatory Body requirements apply to your programme of study, these will be taken into account in the specification of QMUL Model requirements.

### Academic Year of Study

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester	QMUL Model
							<input type="checkbox"/>

### What Are the Entry Requirements?

The entrance requirements would require students to have at least an upper second class degree in Physics or closely related discipline; in exceptional circumstances students may be admitted with a lower second class degree. Students would have to achieve at least 6.5 IELTS score and the equivalent in the relevant TOEFL assessment. This is in line with the current Science and Engineering requirements.

## How Do We Listen and Act on Your Feedback?

The Staff-Student Liaison Committee provides a formal means of communication and discussion between Schools and its students. The committee consists of student representatives from each year in the school/institute together with appropriate representation from staff within the school/institute. It is designed to respond to the needs of students, as well as act as a forum for discussing programme and module developments. Staff-Student Liaison Committees meet regularly throughout the year. Each school operates a Learning and Teaching Committee, or equivalent, which advises the School/Institute Director of Taught Programmes on all matters relating to the delivery of taught programmes at school level including monitoring the application of relevant QM policies and reviewing all proposals for module and programme approval and amendment before submission to Taught Programmes Board. Student views are incorporated in this Committee's work in a number of ways, such as through student membership, or consideration of student surveys.

All schools operate an Annual Programme Review of their taught undergraduate and postgraduate provision. The process is normally organised at a School-level basis with the Head of School, or equivalent, responsible for the completion of the school's Annual Programme Reviews. Schools/institutes are required to produce a separate Annual Programme Review for undergraduate programmes and for postgraduate taught programmes using the relevant Undergraduate or Postgraduate Annual Programme Review pro-forma. Students' views are considered in this process through analysis of the NSS and module evaluations.

## Academic Support

The students will be allocated an academic advisor as well as a project supervisor. Weekly project supervision meetings are expected.

## Programme-specific Rules and Facts

N/A

## Specific Support for Disabled Students

Queen Mary has a central Disability and Dyslexia Service (DDS) that offers support for all students with disabilities, specific learning difficulties and mental health issues. The DDS supports all Queen Mary students: full-time, part-time, undergraduate, postgraduate, UK and international at all campuses and all sites.

Students can access advice, guidance and support in the following areas:

- Finding out if you have a specific learning difficulty like dyslexia
- Applying for funding through the Disabled Students' Allowance (DSA)
- Arranging DSA assessments of need
- Special arrangements in examinations
- Accessing loaned equipment (e.g. digital recorders)
- Specialist one-to-one "study skills" tuition
- Ensuring access to course materials in alternative formats (e.g. Braille)
- Providing educational support workers (e.g. note-takers, readers, library assistants)
- Mentoring support for students with mental health issues and conditions on the autistic spectrum.

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## Links With Employers, Placement Opportunities and Transferable Skills

The School has a dedicated SEPnet Employer Engagement Officer who provides links between students and industry, arranging work placement opportunities.

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## Programme Specification Approval

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**Person completing Programme Specification**

Dr Rodolfo Russo

**Person responsible for management of programme**

Dr Rodolfo Russo

**Date Programme Specification produced/amended  
by School Learning and Teaching Committee**

18 January 2018

**Date Programme Specification approved by  
Taught Programmes Board**

18 January 2018