

Addendum to the Programme Specification

6975 MMath Mathematical Physics

This Addendum has been produced to highlight the key changes made to the existing Programme Specification as a result of the University's response to the Covid-19 Pandemic. You should read it in conjunction with the relevant Programme Specification from the year you started your programme.

[Programme Specification for entry in 2020-21](#)

[Programme Specification for entry in 2019-20](#)

[Programme Specification for entry in 2018-19](#)

University level information

In view of COVID-19, the University has had to make changes to some elements of programme delivery for 2020-21. These changes have included the method of delivery, such as face-to-face and online, and the number of modules available.

The University aims to provide as much of a face-to-face component to your education as prevailing conditions at the time allow, combined with its new blended approach that will develop active independent and group online learning.

As the COVID-19 pandemic develops, the University's response to this and other issues may likewise need to evolve. The University will consult with student representatives as necessary and appropriate and will communicate changes to you as soon as practicable so that you have the information you need to understand how a change may impact you and what steps you need to take next. The University remains committed to supporting you as you learn.

Programme Information

In light of Covid-19, teaching and learning methods may be adapted. Lectures, seminars, tutorials, and consultation with academic staff may be delivered online or in person as the prevailing conditions allow. Group sizes for tutorials and seminars may be adjusted. Assessment methods may also be adapted. For example, in-class test may be replaced by assignments, weightings of assessments may change, exams may be replaced by coursework or take-home assignments and group presentations and projects may take place online or be adapted to allow for social distancing guidelines.

Programme Structure

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 that, in some instances, modules have limited spaces available.

Part 1

Semester 1				Semester 2			
Modules	ECTS	CATS	Module type	Modules	ECTS	CATS	Module Type
MATH1048 Linear Algebra I	7.5	15	Core	PHYS1011 Waves, Light and Quanta	5	10	Core

MATH1059 Calculus	7.5	15	Core	PHYS1013 Energy and Matter	5	10	Core
PHYS1015 Motion and Relativity	5	10	Core				
PHYS1022 Electricity and Magnetism	5	10	Core				
Modules	ECTS	CATS	Module type	Modules	ECTS	CATS	Module Type
PHYS1017 Physics Skills 1	5	10	Comp	MATH1049 Linear Algebra II	7.5	15	Comp
				MATH1060 Multivariable Calculus	7.5	15	Comp
				PHYS1019 Physics Skills 2	5	10	Comp

Part 2

Semester 1				Semester 2			
Students must choose either MATH2004 or PHYS2001, once selected this module will become core.							
Modules	ECTS	CATS	Module type	Modules	ECTS	CATS	Module Type
MATH2039 Analysis	7.5	15	Core	MATH2038 Partial Differential Equations	7.5	15	Core
MATH2045 Vector Calculus and Complex Variable	7.5	15	Core	PHYS2003 Quantum Physics	7.5	15	Core
PHYS2006 Classical Mechanics	7.5	15	Core	PHYS2024 Statistical Mechanics	7.5	15	Core
PHYS2023 Wave Physics	7.5	15	Core	Either MATH2044 Fields and Fluids OR PHYS2001 Electromagnetism	7.5	15	Optional Core

Part 3

Semester 1				Semester 2			
Modules	ECTS	CATS	Module type	Modules	ECTS	CATS	Module Type
MATH3092 Mathematics Project					15	30	Comp
Select 90 CATS from the following modules:							
A maximum of 15 CATS in any level NQF5 module in subject UOSM. A maximum of 15 CATS in any level NQF6 module in subject MATH. A maximum of 15 CATS in any level NQF6 module in subject PHYS.							
Modules	ECTS	CATS	Module type	Modules	ECTS	CATS	Module Type
MATH3018 Numerical Methods	7.5	15	Option	MATH3006 Relativity, Black Holes and Cosmology	7.5	15	Option
MATH3083 Advanced Partial Differential Equations	7.5	15	Option	MATH3052 Mathematical Biology	7.5	15	Option
PHYS3003 Light and Matter	7.5	15	Option	MATH3084 Integral Transform Methods	7.5	15	Option
PHYS3007 Theories of Matter, Space and Time	7.5	15	Option	MATH3088 Complex Analysis	7.5	15	Option
PHYS3008 Atomic Physics	7.5	15	Option	PHYS3002 Nuclei and Particles	7.5	15	Option
				PHYS3004 Crystalline Solids	7.5	15	Option
				PHYS3010 Stellar Evolution	7.5	15	Option

Part 4

Semester 1				Semester 2			
Modules	ECTS	CATS	Module type	Modules	ECTS	CATS	Module Type
				MATH6144 MMath Project	15	30	Comp
Must take 90 CATS from the following:							

A maximum of 15 CATS in any level NQF7 module in subject MATH.
 A maximum of 60 CATS in any level NQF7 module in subject PHYS.

Modules	ECTS	CATS	Module type	Modules	ECTS	CATS	Module Type
MATH6109 Differential Geometry and Lie Groups	7.5	15	Option	MATH6139 Advanced General Relativity	7.5	15	Option
MATH6140 Structure and Dynamics of Networks	7.5	15	Option	MATH6149 Modelling with Differential Equations	7.5	15	Option
MATH6163 Advanced Partial Differential Equations	7.5	15	Option	PHYS6011 Particle Physics	7.5	15	Option
MATH6172 Gravitational Waves	7.5	15	Option	PHYS6017 Computer Techniques in Physics	7.5	15	Option
PHYS6003 Advanced Quantum Physics	7.5	15	Option	PHYS6071 Physics of the Early Universe	7.5	15	Option
PHYS6005 Cosmology	7.5	15	Option				
PHYS6012 Coherent Light, Coherent Matter	7.5	15	Option				