LONDON’S GLOBAL UNIVERSITY

www.ucl.ac.uk/prospectus/maths

MATHEMATICS WITH MATHEMATICAL PHYSICS MSci / UCAS CODE: G1FH 2018 ENTRY

\[ u = u_i + u' \]

\[ u_i \cdot \nabla \cdot (u + u') = -P + \mu \nabla^2 u' \]
Mathematics with Mathematical Physics MSci

This MSci offers an additional year of study on top of the Mathematics with Mathematical Physics BSc, during which students have the opportunity to specialise further by taking more advanced modules, and undertaking a major project.

Key information

Programme starts
September 2018

Location
London, Bloomsbury

Degree benefits

// A wide range of applied mathematics/mathematical physics modules are offered by the department, reflecting the research interests of current staff.

// The MSci allows for additional in-depth study, providing the skills necessary for academic research in mathematics or into employment where mathematics is directly involved.

// Internationally renowned UCL Mathematics is home to world-leading researchers in a wide range of fields, especially geometry, spectral theory, number theory, fluid dynamics and mathematical modelling.

// Three of the six British winners of the Fields medal (the mathematician’s equivalent of the Nobel Prize) have associations with the department.

Research Excellence Framework (REF) 2014

The Research Excellence Framework, or REF, is the system for assessing the quality of research in UK higher education institutions. The 2014 REF was carried out by the UK’s higher education funding bodies, and the results used to allocate research funding from 2015/16.

// 82% rated 4* (’world-leading’) or 3* (’internationally excellent’)

Learn more about the scope of UCL’s research, and browse case studies, on our Research Impact website.

Degree structure

In each year of your degree you will take a number of individual modules, normally valued at 0.5 or 1.0 credits, adding up to a total of 4.0 credits for the year. Modules are assessed in the academic year in which they are taken. The balance of compulsory and optional modules varies from programme to programme and year to year. A 1.0 credit is considered equivalent to 15 credits in the European Credit Transfer System (ECTS).

In the first year and a half of the MSci you will receive a thorough grounding in pure mathematics and mathematical methods following the same modules as the single-subject Mathematics students; except that Quantum Mechanics can be taken in place of Algebra 3. The programme then follows relevant pure and applied mathematics options in the second half of the second year and in the third/fourth years, supplemented by physics modules given by UCL Physics & Astronomy. The fourth year will include a major project, involving a substantial piece of written work and a presentation.

Possible options include:
Atomic and Molecular Physics (UCL Physics & Astronomy);
Mathematical Physics (King’s College London); Quantum Mechanics (UCL Physics & Astronomy).

This programme is offered as a three-year BSc or a four-year MSci degree. The first two years of the programme are identical, and students are advised to apply for the MSci degree in the first instance, as it is possible to transfer to the BSc during the first three years.

YEAR ONE

Core or compulsory module(s)

// Algebra 1
// Algebra 2
// Analysis 1
// Analysis 2
// Applied Mathematics 1
// Applied Mathematics 2
// Mathematical Methods 1
// Mathematical Methods 2

Optional modules

// All first year modules are compulsory.

YEAR TWO

Core or compulsory module(s)

// Analysis 3: Complex Analysis
// Fluid Mechanics
// Mathematical Methods 3

Optional modules

// You will select 2.5 credits of optional modules, including:
// Either:
// Algebra 3: Further Linear Algebra
// Or:
// Quantum Mechanics
// Plus four of the following:
// Algebra 4: Groups and Rings
// Analysis 4: Real Analysis
// Analytical Dynamics
// Computational Methods
// Electromagnetism
// Geometry and Groups
// Mathematical Methods 4
// Number Theory
// Probability and Statistics
// One of the modules may be replaced by a half-credit option from another department, subject to approval.
YEAR THREE
Core or compulsory module(s)
// Mathematics For General Relativity

Optional modules
// You will select:
// 1.5 credits of designated third-year mathematics optional modules
// 1.0 credit of third-year mathematics or suitable physics optional modules
// 1.0 credit of third-year mathematics or suitable physics optional modules, or approved
// options from another department.
// Currently available mathematics options are described on the UCL Mathematics
// website.

FINAL YEAR
Core or compulsory module(s)
// Project in Mathematics (This is the normal choice, but a physics project could possibly
// be taken instead)

Optional modules
// You will select:
// 1.5 credits of fourth-year mathematics options
// 1.0 credit of fourth-year mathematics options or suitable fourth-year physics options
// 0.5 credits of third- or fourth-year mathematics or suitable physics optional modules, or
// approved outside options.

Your learning
Teaching is mainly carried out through lectures and small-group tutorials. Problem classes allow you to exercise the skills you have learned. In addition, an 'office hours' system for each programme allows you to meet with tutors on a one-to-one basis to review parts of the degree you find interesting or that need clarifying. A Student Mentor scheme runs in the department offering support and advice to first-years.

Assessment
Most modules are assessed by two-hour written examinations in the third term, with a small element (10%) of coursework assessment.

Your career
We aim to develop your skills in mathematical reasoning, problem-solving and accurate mathematical manipulation. You will also learn to handle abstract concepts and to think critically, argue logically and express yourself clearly.

A mathematics degree is highly valued by employers due to the skills in logical thinking, analysis, problem-solving and, of course, numeracy, that it develops.

First career destinations of recent graduates (2013-2015) of Mathematics with Mathematical Physics programmes at UCL include:
// Full-time student, PhD in Mathematics at UCL
// Full-time student, PhD in Mathematics at UCL
// Full-time student, PGCE Mathematics at UCL
// Auditor, Deloitte
// Full-time student, Graduate Diploma in Law at the College of Law

Your application
Application for admission should be made through UCAS (the Universities and Colleges Admissions Service). Applicants currently at school or college will be provided with advice on the process; however, applicants who have left school or who are based outside the United Kingdom may obtain information directly from UCAS.

In addition to academic requirements, we expect you to demonstrate an understanding and enjoyment of the subject beyond the examined syllabus, through your reading and involvement in problem-solving activities. Evidence of your curiosity and perseverance in tackling puzzles, and your enjoyment of logical and abstract thinking, should be shown in your application.

If your application is sufficiently strong you will be invited to visit the department for an applicant afternoon. Alternatively, some invitations are for an academic interview. You will also be able to talk to current students and staff and will be given a tour.
Entry requirements

A LEVELS

Grades
A*A*A, or A*AA and a 1 in any STEP paper or distinction in Mathematics AEA

Subjects
Mathematics and Further Mathematics required at A*, or one of Mathematics or Further Mathematics at A* if STEP or AEA offered. Physics also required.

GCSE
English Language and Mathematics at grade C. For UK-based students, a grade C or equivalent in a foreign language (other than Ancient Greek, Biblical Hebrew or Latin) is required. UCL provides opportunities to meet the foreign language requirement following enrolment, further details at: www.ucl.ac.uk/ug-reqs

IB DIPLOMA

Points
39-40 overall.

Subjects
A score of 20 points in three higher level subjects including 7 in Mathematics and at least 6 in Physics, or 19 points in three higher level subjects including 7 in Mathematics and at least 6 in Physics and a 1 in any STEP paper or a distinction in Mathematics AEA, with no score below 5.

OTHER QUALIFICATIONS

UCL considers a wide range of UK and international qualifications for entry into its undergraduate programmes. Full details are given at: www.ucl.ac.uk/otherquals

UNDERGRADUATE PREPARATORY CERTIFICATES (International foundation courses)

The Undergraduate Preparatory Certificates (UPCs) are intensive one-year foundation courses for international students of high academic potential who are aiming to gain access to undergraduate degree programmes at UCL and other top UK universities.

Typical UPC students will be high achievers in a 12-year school system which does not meet the standard required for direct entry to UCL.

For more information see: www.ucl.ac.uk/upc.

TUITION FEES

The fees indicated are for undergraduate entry in the 2017/18 academic year and are for the first year of the programme at UCL only. Fees for 2018 entry will appear here as soon as they are available.

UK & EU: £9,250 (2017/18 - see below)

Overseas: £20,820 (2017/18)

The UK/EU fee quoted above may be subject to increase for the 2018/19 academic year and for each year of study thereafter and UCL reserves the right to increase its fees in line with UK government policy (including on an annual basis for each year of study during a programme). Fees for overseas students may be subject to an annual increase in subsequent years of study by up to 5%.

Please see the full details of UCL’s fees and possible changes on the UCL Current Students website.

FUNDING

Various funding options are available, including student loans, scholarships and bursaries. UK students whose household income falls below a certain level may also be eligible for a non-repayable bursary or for certain scholarships. Please see the Fees and funding pages for more details.

CONTACT

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Department: Mathematics

EU referendum

For up-to-date information relating to specific key questions following the UK’s decision to leave the EU, please refer to:
www.ucl.ac.uk/eu-referendum

Disclaimer

This information is for guidance only. It should not be construed as advice nor relied upon and does not form part of any contract. For more information on UCL’s degree programmes please see the UCL Undergraduate Prospectus at www.ucl.ac.uk/prospectus