MATHEMATICS AND PHYSICS
MSci / UCAS CODE: GF1H
2018 ENTRY

www.ucl.ac.uk/prospectus/maths
Mathematics and Physics MSci /

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

Key information

Programme starts
September 2018

Location
London, Bloomsbury

Degree benefits

// The MSci programme provides both a broad-based training and in-depth study, particularly suitable if you wish to pursue research in mathematics or physics.

// 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.

// UCL Physics & Astronomy was ranked 5th and UCL Mathematics 6th in the most recent QS World University Rankings by Subject 2017.

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 and second years of the programme you will cover a balanced selection of modules in both UCL Mathematics and UCL Physics & Astronomy. You will take a selection of designated modules in the third year and undertake a major project in your fourth year, which will include a substantial piece of written work and a presentation. Students taking this programme do not have to do any practical work, although this is possible if so desired.

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)

// Mathematics modules:
   // Algebra for Joint Honours Students
   // Analysis 1
   // Mathematical Methods 1
   // Mathematical Methods 2

// Physics and astronomy modules:
   // Classical Mechanics
   // Physics of the Universe
   // Thermal Physics
   // Waves, Optics and Acoustics

Optional modules

// All first year modules are compulsory.

YEAR TWO

Core or compulsory module(s)

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

// Physics and astronomy modules:
   // Atomic and Molecular Physics
   // Electricity and Magnetism
   // Quantum Physics
   // Statistical Thermodynamics

Optional modules

// You will select one of the following mathematics modules:
   // Analytical Dynamics
   // Mathematical Methods 4
Data taken from the 'Destinations of Leavers from Higher Education' survey undertaken by HESA looking at the destinations of UK and EU students in the 2013-2015 graduating cohorts six months after graduation.

### YEAR THREE

**Core or compulsory module(s)**
- All third-year modules are optional. Currently available mathematics options are described on the UCL Mathematics website.

**Optional modules**
- You will select 1.5 credits of third-year designated mathematics options, plus three of the following (1.5 credits):
  - Electromagnetic Theory
  - Nuclear and Particle Physics
  - Quantum Mechanics
  - Solid State Physics
- You will also select:
  - 0.5 credits of third-year mathematics options or suitable third-year physics options.
  - 0.5 credits of third-year mathematics options or suitable third-year physics options or an approved outside option

### FINAL YEAR

**Core or compulsory module(s)**
- All final year modules are optional.

**Optional modules**
- You will select:
  - 1.0 credit of fourth-year mathematics options
  - 1.0 credit of suitable fourth-year physics options
  - 0.5 credits of fourth-year mathematics/physics options or an approved outside option
  - Plus either:
    - Physics Project (1.5 credits)
    - or:
    - Project in Mathematics (1.0 credit) together with 0.5 credits of mathematics or physics options

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### Teaching

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 that you find interesting or 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 modules 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 and Physics programmes at UCL include:

- Graduate Analyst, Barclays
- Full-time student, MPhil in Physics at the University of Cambridge

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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 or 5. For UK-based students, a grade C or 5 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 2018/19 academic year. The UK/EU fees shown are for the first year of the programme at UCL only. The Overseas fees shown are the fees that will be charged to 2018/19 entrants for each year of study on the programme, unless otherwise indicated below.

// UK & EU: £9,250 (2018/19)
// Overseas: £22,790 (2018/19)

Full details of UCL’s tuition fees, tuition fee policy and potential increases to fees can be found on the UCL 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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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