MATHEMATICS WITH MATHEMATICAL PHYSICS BSc / UCAS CODE: G1F3 2019 ENTRY

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Mathematics with Mathematical Physics BSc /

Mathematics and physics are closely interlinked subjects, with each providing many fascinating insights into the other. Students on this programme receive a thorough mathematical training and may also take modules in UCL Physics & Astronomy, as well as more widely across both UCL and the University of London.

### Key information

**Programme starts**
September 2019

**Location**
London, Bloomsbury

### Degree benefits

- Gain transferable skills such as numeracy, problem-solving and logical thinking, which can lead to a large variety of interesting, diverse and well-paid careers.
- A wide range of applied mathematics/mathematical physics modules are offered by the department, reflecting the research interests of current staff.
- 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.

### Degree structure

In each year of your degree you will take a number of individual modules, normally valued at 15 or 30 credits, adding up to a total of 120 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 30-credit module is considered equivalent to 15 credits in the European Credit Transfer System (ECTS).

In the first year and a half of the BSc 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 year, supplemented by physics modules given by UCL Physics & Astronomy.

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
- Alternatively a half-credit module may be taken from another department, subject to approval.
### Final Year

**Core or compulsory module(s)**
- All final-year modules are optional. Currently available UCL Mathematics options are described on the departmental website: [www.ucl.ac.uk/mathscourses/undergraduates](http://www.ucl.ac.uk/mathscourses/undergraduates)

**Optional modules**
- You will select 1.5 credits of third-year mathematics optional modules; a further 1.5 credits of third-year mathematics optional modules or suitable third-year physics optional modules
- 1.0 credit of third-year mathematics optional modules or suitable third-year physics optional modules or approved modules from another department.

### 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 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 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:

### 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.
Entry requirements

A LEVELS


**Contextual Offer:** A*AA. A*A in any order from Mathematics and Further Mathematics, and A in Physics.

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-requirements

IB DIPLOMA

**Standard Offer:** 39-40. 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 2 in any STEP paper or a distinction in Mathematics AEA, with no score below 5.

**Contextual Offer:** 39. A score of 19 points in three higher level subjects including 7 in Mathematics and at least 6 in Physics, with no score below 5.

**CONTEXTUAL OFFERS – ACCESS UCL SCHEME**

As part of our commitment to increasing participation from underrepresented groups, students may be eligible for a contextual offer as part of the Access UCL scheme. For more information see www.ucl.ac.uk/prospectus

**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)**

UCL 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 2019/20 academic year. The UK/EU fees shown are for the first year of the programme at UCL only. Fees for future years may be subject to an inflationary increase. The Overseas fees shown are the fees that will be charged to 2019/20 entrants for each year of study on the programme, unless otherwise indicated below.

// UK & EU: £9,250 (2019/20)
// Overseas: £23,470 (2019/20)

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

**Additional costs**

If you are concerned by potential additional costs for books, equipment, etc. on this programme, please get in touch with the relevant departmental contact (details given on this page).

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/ucl-and-europe

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