MATHEMATICS AND PHYSICS
BSc /
UCAS CODE: GF13
2021 ENTRY

www.ucl.ac.uk/prospectus
Physics and mathematics are inextricably linked. It is not really possible to understand the basic concepts of physics such as elementary particle theory without a strong grounding in both pure and applied mathematics. This BSc combines the study of mathematics and physics on an equal basis, each reinforcing the other.

Key information

Programme starts
September 2021

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.
- Internationally renowned (15th in Times Higher Education World University Rankings by Subject, 2020) 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 and UCL Mathematics both rank in the top 20 in THE World University Rankings by Subject 2020.

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 and second years of the programme you will cover a balanced selection of modules in both UCL Mathematics and UCL Physics & Astronomy. Having laid the basic foundations there is a wide range of modules from both subjects in the third year of the degree. Most of the modules will be selected from those followed by single-subject students. 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.

Upon successful completion of 360 credits, you will be awarded a BSc (Hons) in Mathematics and Physics.

Please note that the list of modules given here is indicative. This information is published a long time in advance of enrolment and module content and availability is subject to change.

YEAR ONE

Compulsory module(s)

- Mathematics modules:
  - Algebra for Joint Honours Students
  - Analysis 1
  - Mathematical Methods 1
  - Mathematical Methods 2
- Physics and astronomy modules:
  - Classical Mechanics
  - Atoms, Stars and the Universe
  - Thermal Physics
  - Waves, Optics and Acoustics

Optional modules

- All first year modules are compulsory.

YEAR TWO

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 0.5 credit mathematics modules:
  - Analytical Dynamics
  - Mathematical Methods 4
**FINAL YEAR**

**Compulsory module(s)**

- All final-year modules are optional. Currently available mathematics options are described on the UCL Mathematics website.

**Optional modules**

- You will select:
  - 1.5 credits from the following physics options:
    - Electromagnetic Theory
    - Nuclear and Particle Physics
    - Quantum Mechanics
    - Solid State Physics
  - 1.0 credit from third-year mathematics options
  - 1.0 credit from suitable physics or third-year mathematics options
  - 0.5 credits of physics, third-year mathematics 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 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.

**Accessibility**

Details of the accessibility of UCL buildings can be obtained from AccessAble. Further information can also be obtained from the UCL Student Support & Wellbeing team.

**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.

**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


**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](http://www.ucl.ac.uk/ug-reqs).

### Contextual Offer


**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](http://www.ucl.ac.uk/ug-reqs).

### IB DIPLOMA

**Standard Offer:** 40 points. A score of 40 points overall with 20 points in three higher level subjects including 7 in higher level Mathematics and 6 in higher level Physics, or 39 overall with 19 in three higher level subjects including 7 in higher level Mathematics, 6 in higher level Physics plus a grade 2 in any STEP paper/distinction in Mathematics AEA. No higher level score below 5.

**Contextual Offer:** 39 points. 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](http://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](http://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](http://www.ucl.ac.uk/upc).

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### TUITION FEES

The fees indicated are for undergraduate entry in the 2021/22 academic year. The UK 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 2021/22 entrants for each year of study on the programme, unless otherwise indicated below.

- UK: £9,250 (2021/22)
- Overseas: £28,500 (2021/22)

Full details of UCL’s tuition fees, tuition fee policy and potential increases to fees can be found on the [UCL Students website](http://www.ucl.ac.uk/ug-reqs).

### ADDITIONAL COSTS

This programme does not have any additional costs outside of purchasing books or stationery, printing, thesis binding or photocopying.

A guide including rough estimates for these and other living expenses is included on the UCL Fees and funding pages. If you are concerned by potential additional costs for books, equipment, etc., 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

**Dr Robert Bowles**

Email: admissions@math.ucl.ac.uk

Telephone: Department: Mathematics

UK withdrawal from the EU

For up-to-date information relating to specific key questions following the UK’s withdrawal from the EU, please refer to: [www.ucl.ac.uk/brexit](http://www.ucl.ac.uk/brexit).