ASTROPHYSICS BSc / UCAS CODE: F510 2020 ENTRY

www.ucl.ac.uk/prospectus
Astrophysics involves a broad frontier of technologies including materials science, optics and electronics. This three-year programme teaches students to apply their knowledge of physics to astronomical observation and to the interpretation of the data and images obtained.

### Key information

**Programme starts**  
September 2020

**Location**  
London, Bloomsbury

### Degree benefits

- The programme is accredited by the Institute of Physics (IOP) and includes the very latest developments and discoveries in the field, based on our highly rated research.
- Collaborative links with both industry and international research laboratories provide insight into the practical application of your studies.
- You will undertake practical work at the UCL Observatory (UCLO) and benefit from our close association with the Royal Astronomical Society.

### Accreditation

This programme is accredited by the Institute of Physics. Holders of accredited degrees can follow a route to Institute of Physics membership and the Chartered Physicist (CPhys) professional qualification. Graduates of accredited Integrated Master’s (MPhys or MSci) degrees have fulfilled the educational requirements for CPhys status, while graduates of accredited Bachelor’s (BSc) degrees have partially fulfilled these requirements.

### 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).

Compulsory modules in the first two years provide a grounding in mathematics and classical and quantum physics. You will also undertake modules which build up an increasing exposure to topics in astronomy and astrophysics. This starts in the first year with compulsory modules in Physics of the Universe and Practical Astronomy. This is followed in the second year by Astrophysical Processes and Practical Astrophysics, leading into compulsory third-year modules in Interstellar Physics, Physical Cosmology, and Astronomical Spectroscopy. The third year also provides for optional modules to further enhance and enrich your knowledge of astrophysics topics.

This programme is offered both as a three-year BSc and a four-year MSci, with common structures and subjects for the first two years. However, the additional fourth year of the MSci programme allows for a greater depth of study and we recommend you apply for an MSci initially, as this keeps more options open.

#### YEAR ONE

**Core or compulsory module(s)**

- PHAS003 Practical Skills 1A (Astronomy) (Level 4) 15 credits
- PHAS004 Atoms, Stars and the Universe (Level 4) 15 credits
- PHAS005 Waves, Optics and Acoustics (Level 4) 15 credits
- PHAS006 Thermal Physics and the Properties of Matter (Level 4) 15 credits
- PHAS007 Practical Physics and Computing 1 (Level 4) 15 credits
- PHAS008 Mathematical Methods I (Level 4) 15 credits
- PHAS010 Classical Mechanics (Level 4) 15 credits
- PHAS017 Developing Effective Communications 1 (non-credit, but will appear in student’s transcript)

**Optional modules**

- All first-year modules are compulsory.

#### YEAR TWO

**Core or compulsory module(s)**

- PHAS021 Electricity and Magnetism (Level 5) 15 credits
- PHAS018 Astrophysical Processes: Nebulae to Stars (Level 5) 15 credits
- PHAS019 Planetary Science (Level 5) 15 credits
- PHAS020 Practical Astrophysics and Computing (Level 5) 15 credits
- PHAS022 Quantum Physics (Level 5) 15 credits
- PHAS024 Statistical Physics of Matter (Level 5) 15 credits
- PHAS025 Mathematical Methods III (Level 5) 15 credits
- PHAS035 Developing Effective Communications 2 (non-credit, but will appear in student’s transcript)

**Optional modules**

- You will select 15 credits in total from options that may include the following (choices must be approved by your Programme Tutor):
- XBB0023 Astrobiology (Level 5) 15 credits
- MATH0043 Mathematics for Physics and Astronomy (Level 5) 15 credits
- PHAS0027 Environmental Physics (Level 5) 15 credits
**Core or compulsory module(s)**

- PHAS0036 The Physics of Stars (Level 6) 15 credits
- PHAS0037 Physical Cosmology (Level 6) 15 credits
- PHAS0043 Practical Astronomy 1 – Techniques (Level 6) 15 credits
- PHAS0046 Interstellar Physics (Level 6) 15 credits
- PHAS0047 Astronomical Spectroscopy (Level 6) 15 credits

**Optional modules**

You will select one of the following:

- PHAS0044 Practical Astronomy 2 Applications (Level 6) 15 credits
- PHAS0113 Astrophysics Group Project (Level 6) 15 credits

You will select 30 credits in total from options that may include the following (choices must be approved by your Programme Tutor):

- GEOL0022 Physics of Oceans, Ice Sheets and Climate (Level 6) 15 credits
- PHAS0038 Electromagnetic Theory (Level 6) 15 credits
- PHAS0040 Nuclear and Particle Physics (Level 6) 15 credits
- PHAS0041 Quantum Mechanics (Level 6) 15 credits
- PHAS0050 Energy and Climate (Level 6) 15 credits
- PHAS0049 Theory of Dynamical Systems (Level 6) 15 credits
- PHAS0056 Scientific Computing Using Object Oriented Languages (Level 6) 15 credits
- MATH0025 Mathematics for General Relativity (Level 6) 15 credits

**Your learning**

Teaching is delivered through lectures, laboratory (and as appropriate, observatory) practical sessions, and supervised problem-solving tutorials. These tutorials are designed to deal with lecture-based questions, enlarge on topics addressed in lectures, and allow clarification and in-depth discussion of new concepts.

**Assessment**

Assessment will normally involve end-of-year examinations, and an element of assessed coursework. For practical work you will be continuously assessed.

**Your career**

Your scientific training will equip you with an understanding of mathematics, and of physical principles and techniques, as well as transferable skills in analysis, rational argument and innovative problem solving. Surveys by the IOP indicate that physicists’ versatility is welcomed by a vast range of professions.

Around half our graduates choose to pursue further study for an MSc or PhD. A PhD opens up the possibility of an academic or research career in a university or research institute. Alternatively, like many of our graduates, you may consider employment in research, design, development, computing, finance, marketing and teaching, among others.

**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 the subjects and grades specified in the qualifying examinations, we are also looking for evidence of self-motivation and an enthusiastic interest in the subject. This may be demonstrated through paid or voluntary work experience, academic project work, or your interests and hobbies beyond the school curriculum.

Your application will be carefully assessed based on your UCAS form and reference. If you are made an offer, you will be invited to a Physics Offer Holder’s Day. This will include presentations, a tour of facilities and an opportunity to meet current students and staff members. Attendance is strongly recommended as we cannot provide private tours of the department at the moment.
Entry requirements

A LEVELS

Standard Offer: AAA. Mathematics and Physics required.

Contextual Offer: AAB. A in Mathematics and Physics 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

Standard Offer: 38 points. A total of 18 points in three higher level subjects including Mathematics and Physics at grade 6, with no score below 5.

Contextual Offer: 36 points. A total of 17 points in three higher level subjects including Mathematics and Physics at grade 6, 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 2020/21 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 2020/21 entrants for each year of study on the programme, unless otherwise indicated below.

// UK & EU: £9,250 (2020/21)
// Overseas: £28,610 (2020/21)

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

You will require the approved model of calculator for use in exams. For details please see the Exams and Assessment page of the UCL website. There are some optional activities in which you may like to participate that incur an additional cost, for example membership of the Student Physics Society, or the department’s annual weekend away at Cumberland Lodge. If you are concerned by potential additional costs on t

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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Brexit

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/brexit

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