Chemistry with Mathematics BSc

Many aspects of chemistry, particularly physical and theoretical chemistry, require a good understanding of advanced mathematical methods. The Chemistry with Mathematics BSc offers the opportunity to gain a fundamental understanding of the origins of chemical behaviour, while exploring exciting developments at the interface of chemistry with the other physical sciences.

Key information

Programme starts
September 2020

Location
London, Bloomsbury

Degree benefits

Consistently regarded as one of the best chemistry departments in the UK, we offer you an excellent education with high standards of teaching.

You will benefit from our outstanding research profile as you are taught by lecturers who are experts in a wide range of chemistry-related fields.

You will have the opportunity to select optional modules from the wide range available within UCL’s highly regarded Department of Mathematics.

We offer access to state-of-the-art facilities, enhanced by our strong affiliation to other centres of excellence such as the London Centre for Nanotechnology.

Accreditation
The Royal Society of Chemistry accreditation is a peer review process founded on the judgement of professional chemists. It provides a structured mechanism to assess, evaluate, and enhance the quality of degree programmes and demonstrates a commitment to continuous improvement.

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).

This programme is offered either as a three-year BSc or as a four-year MSci. The first two years of study are identical, so you can defer which to opt for until the end of your second year. We advise you to select the four-year MSci initially as this keeps more options open.

The chemistry content directly follows that of the single-subject Chemistry programme. You will cover the full range of chemistry core components, together with relevant optional modules in chemistry such as Quantum Mechanics, Computational Chemistry and Numerical Methods.

The mathematics component takes up around 25% of the programme. In the first two years there are a number of compulsory mathematics modules including modules in pure mathematics, advanced calculus and geometry, group theory and linear algebra, while in the final year you choose from the wide range of Mathematics options on offer.

In the final year you also undertake a compulsory literature project.

YEAR ONE

Core or compulsory module(s)

- Basic Inorganic Chemistry
- Basic Organic Chemistry
- Basic Physical Chemistry
- Introduction to Chemical Principles
- Mathematics for Science 1
- Mathematics for Science 2
- Chemical Skills

Optional modules

You will select a module from a wide range of optional modules.

YEAR TWO

Core or compulsory module(s)

- Mathematical Methods In Chemistry
- Principles of Inorganic Chemistry
- Principles of Organic Chemistry
- Principles of Physical Chemistry
- Mathematical Methods In Physical Sciences

Optional modules

All second year modules are compulsory.

FINAL YEAR

Core or compulsory module(s)

- Advanced Practical Chemistry
- Advanced Topics in Inorganic Chemistry
- Advanced Topics in Physical Chemistry
- Principles and Methods of Organic Synthesis
- Literature Project

Optional modules

You will select two modules from a wide range of Mathematics, Chemistry and other approved undergraduate options.
Your learning

Your learning will combine lectures, practical classes and group workshops. In addition you will attend tutorials in groups of four to six students which provide specialised support for the core modules.

Assessment

Each module will usually involve at least two methods of assessment. These may include coursework (problem sheets, essays or poster presentations), an examination, or laboratory classes. We believe in providing feedback to students, such as face-to-face marking in laboratories. Your third-year project will be assessed through a written report.

Your career

As a UCL Chemistry graduate you will have developed both discipline-based and highly sought after analytical skills, for example in logical thought and numeracy.

On completion of your degree you will have the obvious option of pursuing a career within the chemical industry. This is recognised as one of the most exciting and successful contributors to the UK economy, for example in the pharmaceutical, biotechnology and nanotechnology sectors.

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.

Together with essential academic requirements, we are looking for strong evidence in your personal statement of your interest in the subject and your understanding of it. These requirements may be evidenced by examples of project work, relevant work experience or, perhaps, through your knowledge of current events involving chemistry. We also look for your ability to communicate clearly in English.
Entry requirements

A LEVELS

Standard Offer: AAA. Mathematics and Chemistry required.

Contextual Offer: AAB. AA in Chemistry and Mathematics required.

GCSE

English Language at grade C or 5, plus Mathematics at grade B or 6. 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 score of 18 points in three higher level subjects including 6 in Chemistry and Mathematics, with no score below 5.

Contextual Offer: 36 points. A score of 17 points in three higher level subjects including 6 in Chemistry and Mathematics, 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.