MATHEMATICAL COMPUTATION
MEng /
UCAS CODE: G430
2018 ENTRY

www.ucl.ac.uk/prospectus/compsci
Mathematical Computation MEng

This MEng is aimed at a small cohort of students with strong mathematical ability. The programme focuses on theoretical computer science and equips you with the ability to model complex systems and represent, manipulate, and analyse the vast amounts of data and knowledge required to solve massively complex problems.

Key information

Programme starts
September 2018

Location
London, Bloomsbury

Degree benefits

- Located in purpose-built accommodation, the department offers excellent laboratory and experiment facilities in a friendly and personal learning environment.
- The cutting-edge knowledge from our extensive research will be fed into your lecture programmes.
- Our location in the centre of London strengthens our close associations with industry and the financial sector, and offers you extensive opportunities for developing contacts with potential employers.

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.

- 96% 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).

The programme will cover a wide range of mathematical topics underpinning the analysis of computational systems including logic, discrete mathematics, information theory, probability and statistics. With this foundation, you will investigate methods for representing, manipulating and reasoning with the vast amounts of data and knowledge available to modern computers. The mathematical content is deeper and more substantial than in our other computer science programmes. Practical problem-solving will mesh with this deeper theoretical work, and you will also take part in regular reading groups and seminars solely for Mathematical Computation students.

Second-year students have one free optional module which may be taken in a subject outside the department. In the third and final years you may choose from a wide range of specialist options including game theory, artificial intelligence, graph theory, evolutionary computation, machine learning, dynamical systems and cryptography.

In the final year you will produce a dissertation in a subject of your choice.

YEAR ONE

Core or compulsory module(s)

- Algebra I
- Algebra II
- Mathematical Methods I
- Principles of Programming
- Object-Oriented Programming
- Robotics Programming
- Theory I
- Theory II

Optional modules

- All first year modules are compulsory.

YEAR TWO

Core or compulsory module(s)

- Algebra III: Further Linear Algebra
- Compilers
- Directed Reading
- Logic and Database Theory
- Mathematical Methods II
- Network and Concurrency
- Probability and Statistics

Optional modules

- You will select one optional module from a wide range available both within and outside UCL Computer Science.
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)
- Computational Complexity
- Introduction to Cryptography
- Operating Systems

Optional modules
- Optional modules will include:
  - Artificial Intelligence
  - Computer Graphics
  - Functional Programming
  - Game Theory
  - Graph Theory
  - Image Processing
  - Interaction Design
  - Machine Learning
  - Networked Systems

FINAL YEAR

Core or compulsory module(s)
- Individual Project (Master's Level)

Optional modules
- You will select modules from a wide range of Master's level mathematics and computer science options. Options may include:
  - Affective Computing and Human-Robot Interaction
  - Bioinformatics
  - Information Retrieval and Data Mining
  - Introduction to Cryptography
  - Machine Vision
  - Mobile and Cloud Computing
  - People and Security
  - Virtual Environments

Your learning

Modules usually last for one term and include a mixture of lectures, tutorials and lab classes. There is a focus on practical problem-based learning and group work. From the very first week of teaching you will find yourself applying theory and working with others on solving real and challenging problems.

Assessment

Student performance is continually monitored, and all modules are assessed, usually by individual or group coursework assignments and an unseen written examination at the end of the academic year.

Your career

The strong practical and analytical skills developed during your studies will leave you well placed to meet the growing global demand for graduates in this fast-moving industry.

Our graduates have previously secured careers with global IT consultancies, as IT analysts with City of London banks and as IT specialists with manufacturing industries. As well as these pathways, the UCL Mathematical Computation MEng will provide you with an excellent foundation for a broad spectrum of different careers.

Please see first destinations of recent graduates (2013-2015) from UCL Computer Science programmes for a selection of representative careers.

- Software Engineer, Shazam
- Application Developer, Goldman Sachs
- Software Developer, Credit Suisse
- Business and Systems Integration Analyst, Accenture
- Application Designer, Deutsche Bank

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 are looking for you to demonstrate a proven interest in computing and a clear understanding of what studying computer science entails. We are keen to admit students with an interest in subjects that relate to applications of computer technology.

If your application demonstrates the academic profile and commitment to computer science we are looking for, you will be invited to attend a department open day to find out more about us and what it’s like to study mathematical computation at UCL.
Entry requirements

**A LEVELS**
Grades
A*AA

Subjects
Mathematics with A* required and Further Mathematics preferred.

**GCSE**
English Language and Mathematics at grade C. For UK-based students, a grade C 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 overall.

Subjects
A total of 19 points in three higher level subjects including grade 7 in Mathematics, 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.

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**TUITION FEES**
The fees indicated are for undergraduate entry in the 2017/18 academic year and are for the first year of the programme at UCL only. Fees for 2018 entry will appear here as soon as they are available.

- UK & EU: £9,250 (2017/18 - see below)
- Overseas: £23,710 (2017/18)

The UK/EU fee quoted above may be subject to increase for the 2018/19 academic year and for each year of study thereafter and UCL reserves the right to increase its fees in line with UK government policy (including on an annual basis for each year of study during a programme). Fees for overseas students may be subject to an annual increase in subsequent years of study by up to 5%.

Please see the full details of UCL’s fees and possible changes on the UCL Current 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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Department: Computer Science

**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

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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