LONDON’S GLOBAL UNIVERSITY

ROBOTICS AND COMPUTATION MSc
2019/20 ENTRY

www.ucl.ac.uk/graduate/
Robotics and autonomous systems (RAS) are set to shape innovation in the 21st century, underpinning research in a wide range of challenging areas: the ageing population, efficient health care, safer transport, and secure energy. The UCL edge in scientific excellence, industrial collaboration and cross-sector activities make it ideally placed to drive IT robotics and automation education in the UK.

### Degree summary

The programme provides an overview of robotic and computational tools for robotics and autonomous systems as well as their main computational components: kinetic chains, sensing and awareness, control systems, mapping and navigation. Optional modules in machine learning, human-machine interfaces and computer vision help students grasp fields related to robotics more closely, while the project thesis allows students to focus on a specific research topic in depth.

// UCL received the highest percentage (96%) for quality of research in Computer Science and Informatics in the UK’s most recent Research Excellence Framework (REF2014).

// With the external project involvement anticipated, students on this programme will have the opportunity to interact and collaborate with key companies in the industry - Airbus, Shadow Hand, OC Robotics and Intuitive Surgical - and work on real-world problems through industry-supported projects.

// Recent investment across UCL in the Faculty of Engineering and The Bartlett Faculty of the Built Environment has created the infrastructure for an exciting robotics programme, which will be interdisciplinary and unique within the UK and Europe.

Teaching is delivered by lectures, tutorials, practical sessions, projects and seminars. Assessment is through examination, individual and group projects and presentations, and design exercises.

### Degree structure

**Mode:** Full-time: 1 year  
**Location:** London, Bloomsbury  
Students undertake modules to the value of 180 credits. The programme consists of four core modules (60 credits), two to four optional modules (30 to 60 credits), up to two elective modules (30 credits), and a dissertation/report (60 credits).

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.

**COMPULSORY MODULES**

- Robotic Control Theory and Systems (15 credits)
- Robotic Sensing, Manipulation and Interaction (15 credits)
- Robotic Systems Engineering (15 credits)
- Robotic Vision and Navigation (15 credits)

**OPTIONAL MODULES**

- Students will need to choose a minimum of 30 and a maximum of 60 credits from the optional modules.
- Options (15 to 60 credits)
- Acquisition and Processing of 3D Geometry (15 credits)
- Image Processing (15 credits)
- Inverse Problems in Imaging (15 credits)
- Mathematical Methods, Algorithmics and Implementations (15 credits)
- Numerical Optimisation (15 credits)
- Research Methods and Reading (15 credits)
- Sensors and Location (15 credits)
- Electives (up to 45 credits)
- Affective Computing and Human-Robot Interaction (15 credits)
- Applied Machine Learning (15 credits)
- Computational Modelling for Biomedical Imaging (15 credits)
- Graphical Models (15 credits)
- Introduction to Machine Learning (15 credits)

Please note: the availability and delivery of optional modules may vary, depending on your selection. A list of acceptable elective modules is available on the Departmental page.

**DISSERTATION/REPORT**

- All students undertake an independent research project which culminates in a dissertation of 12,000 words.
Your career

Robotics is a growing field encompassing many technologies with applications across different industrial sectors, and spanning manufacturing, security, mining, design, transport, exploration and healthcare. Graduates from our MSc programme will have diverse job opportunities in the international marketplace with their knowledge of robotics and the underpinning computational and analytical fundamentals that are highly valued in the established and emerging economies. Students will also be well placed to undertake PhD studies in robotics and computational research specific to robotics but translational across different analytical disciplines or applied fields that will be influenced by new robotic technologies and capabilities.

Employability

This programme prepares students to enter a robotics-related industry or any other occupation requiring engineering or analytical skills. Graduates with skills to develop new robotics solutions and solve computational challenges in automation are likely to be in demand globally.
Entry requirements

A minimum of an upper second-class Bachelor’s degree from a UK university or an overseas qualification of an equivalent standard in a highly quantitative subject such as computer science, mathematics, electrical or electronic engineering, or the physical sciences. Students should also have some experience with a programming language such as C/C++, Java, Python or Matlab. Appropriate industrial experience may also be considered.

English language proficiency level

If your education has not been conducted in the English language, you will be expected to demonstrate evidence of an adequate level of English proficiency.

The level of English language proficiency for this programme is: Good. Information about the evidence required, acceptable qualifications and test providers is provided at: www.ucl.ac.uk/graduate/english-requirements

Your application

Students are advised to apply as early as possible due to competition for places. Those applying for scholarship funding (particularly overseas applicants) should take note of application deadlines.

When we access your application we would like to learn:

- why you want to study Robotics and Computation at graduate level
- why you want to study Robotics and Computation at UCL
- what particularly attracts you to the chosen programme
- how your academic and professional background meets the demands of this challenging programme
- where you would like to go professionally with your degree

Together with essential academic requirements, the personal statement is your opportunity to illustrate whether your reasons for applying to this programme match what the programme will deliver.

There is an application processing fee for this programme of £75 for online applications and £100 for paper applications. Further information can be found at: www.ucl.ac.uk/prospective-students/graduate/taught/application.

FEES AND FUNDING 2019/20 ENTRY

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The tuition fees shown are for the year indicated above. Fees for subsequent years may increase or otherwise vary. Further information on fee status, fee increases and the fee schedule can be viewed on the UCL Students website.

All full-time students are required to pay a fee deposit of £2,000 for this programme. All part-time students are required to pay a fee deposit of £1,000.

Four MSc Scholarships, worth £4000 each, are made available by the Department of Computer Science to UK/EU offer holders with a record of excellent academic achievement. The closing date will be in June 2019. For more information, please see the department pages.

Full details of funding opportunities can be found on the UCL Scholarships website: www.ucl.ac.uk/scholarships

APPLICATION DEADLINE

All applicants: 14 June 2019

Details on how to apply are available on the website at: www.ucl.ac.uk/graduate/apply

CONTACT

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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/brexit