INTEGRATED PHOTONIC AND ELECTRONIC SYSTEMS MRes
/ 2019/20 ENTRY

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Integrated Photonic and Electronic Systems MRes /

The Integrated Photonic and Electronic Systems MRes, taught at the University of Cambridge and at the UCL Centre for Doctoral Training in Integrated Photonic and Electronic Systems, aims to train students to PhD level in the skills needed to produce new integrated photonic systems for applications ranging from information display to ultra-fast communications and industrial materials processing.

**Degree summary**

The programme offers a wide range of specialised modules, including electronics and biotechnology. Students gain a foundation training in the scientific basis of photonics and systems, and develop a good understanding of the industry. They are able to design an individual bespoke programme to reflect their prior experience and future interests.

The University of Cambridge and UCL have recently established an exciting Centre for Doctoral Training (CDT) in Integrated Photonic and Electronic Systems, leveraging their current strong collaborations in research and innovation.

The CDT provides doctoral training using expertise drawn from a range of disciplines, and collaborates closely with a wide range of UK industries, using innovative teaching and learning techniques.

The centre aims to create graduates with the skills and confidence able to drive future technology research, development and exploitation, as photonics becomes fully embedded in electronics-based systems applications ranging from communications to sensing, industrial manufacture and biomedicine.

The programme is delivered through a combination of lectures, tutorials, projects, seminars, and laboratory work. Student performance is assessed through unseen written examination and coursework (written assignments and design work).

**Degree structure**

Mode: Full-time: 1 year

Location: London, Bloomsbury

Students undertake modules to the value of 180 credits. Students take two compulsory research projects (90 credits), one transferable skills module (15 credits), three optional modules (45 credits) and two elective modules (30 credits). Project Report 1 at either UCL or Cambridge Project Report 2 at either UCL, Cambridge or in industry Transferable Business Skills

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.

**OPTIONAL MODULES**

- Biosensors
- Advanced Photonic Devices
- Photonic Systems
- Broadband Technologies and Components
- Management of Technology
- Strategic Management
- Telecommunication Business Environment

**ELECTIVE MODULES**

- Electronic Sensors and Instrumentation
- Display Technology
- Analogue Integrated Circuits
- Robust and Nonlinear Systems and Control
- Digital Filters and Spectrum Estimation
- Image Processing and Image Coding
- Computer Vision and Robotics
- Materials and Processes for Microsystems
- Solid State Devices and Chemical/Biological Sensors
- Advanced Communications and Coding
- Sensors for Network Services and Design
- Optical Transmission and Networks
- Nanotechnology and Healthcare
- RF Circuits and Sub-systems

**DISSERTATION/REPORT**

All students undertake two research projects. An independent research project (45 credits) and an industry-focused project (45 credits).
Your career

Dramatic progress has been made in the past few years in the field of photonic technologies. These advances have set the scene for a major change in commercialisation activity where photonics and electronics will converge in a wide range of information, sensing, display, and personal healthcare systems. Importantly, photonics will become a fundamental underpinning technology for a much greater range of companies outside the conventional photonics arena, who will in turn require those skilled in photonic systems to have a much greater degree of interdisciplinary training, and indeed be expert in certain fields outside photonics.

Employability

Our students are highly employable and have the opportunity to gain industry experience during their MRes year in large aerospace companies like Qioptiq, and technology and communications companies such as Toshiba through industry placements. Several smaller spin-out companies from both UCL and Cambridge also offer projects. The CDT organises industry day events which provide an excellent opportunity to network with senior technologists and managers interested in recruiting photonics engineers. Recent roles our graduates have undertaken include a fiber laser development engineer, a patent attorney, a computational physicist, a development scientist, a control and test engineer and postdoctoral researchers.
Entry requirements

Normally a minimum of an upper second-class Bachelor’s degree in a relevant discipline from a UK university or an overseas qualification of an equivalent standard.

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: Standard.

Information about the evidence required, acceptable qualifications and test providers is provided at:
www.ucl.ac.uk/graduate/english-requirements

Your application

Students normally have a minimum of an upper second-class Bachelors degree in a relevant discipline from a UK university or an overseas qualification of an equivalent standard.

FEES AND FUNDING 2019/20 ENTRY

// UK: £5,210 (FT)
// EU: £5,210 (FT)
// Overseas: £26,660 (FT)

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.

A number of competitive EPSRC studentships are normally available for candidates liable to pay fees at the UK/EU rate.

The Institution of Engineering and Technology also awards competitive scholarships for postgraduate study; for further details please visit www.theiet.org

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

APPLICATION DEADLINE

All applicants: 26 July 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