Imperial College
London

Imperial Centre for Quantum Engineering & Science
1+3 year PhD Programme in Quantum Engineering

We accept applications through CDT in Controlled Quantum Dynamics (state your interestin Quantum Engineering) till formal approval

PhD in Quantum Systems Engineering

The ability to understand and control quantum effects has undergone rapid development in recent years. This has led to a surge in recognition that many of these effects can be employed in novel technologies, some of which are already having an impact on our daily lives. The Centre for Quantum Engineering & Science will provide a multi-disciplinary training to place individuals at the

What is the Centre?

The aim of the Centre is to get engineers and applied scientists into quantum technology so that they can explore novel and different ideas. In order to provide an environment where interdisciplinary efforts maximise their impact, we will offer multi-level training aimed at bridging the gap between quantum science and the engineering disciplines. A comprehensive programme of postgraduate training will cover the fundamentals of systems engineering, quantum communication and computation, quantum metrology, imaging and sensing, as well as helping students to develop their skills in innovation, entrepreneurship, and design through collaborations with industry partners and national quantum technology (QT) hubs.

We are looking for individuals from an engineering or physical science background. Knowledge of quantum physics/technology is not necessary.

Programme Guide for MSc Year

The following is a provisional course programme:

Term 1: Generic Skills & Foundations

Intensive 2 week course on Tools for QE I (Quantum Mechanics & Linear Algebra) followed by a second 2 week course on Systems Engineering.

Quantum Information + Post quantum cryptography, Atoms & Photons, Tools for QE II, QE Lab
Innovation for QE by Imperial Business School

Term 2: Applications Courses

Entrepreneurship for QE by Imperial Business School

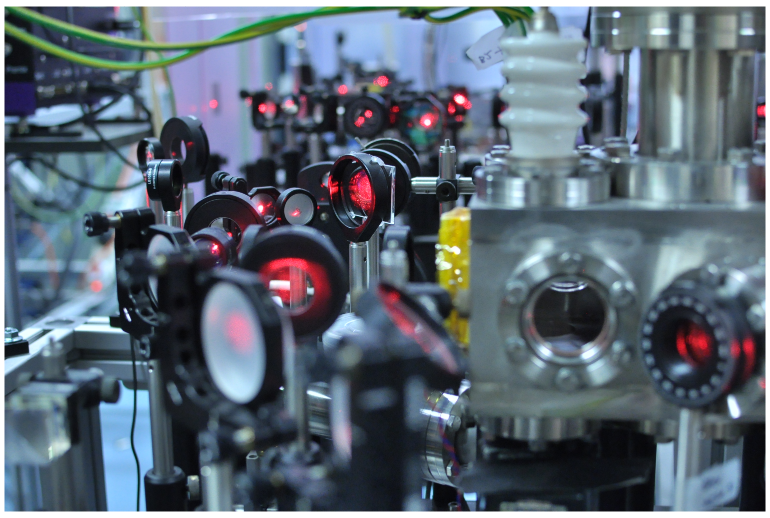
Information Theory for QE, Platforms for Quantum Technology, Quantum Metrology, Photonics Technology.

Term 3: Research Projects & Industry Placements

During the second term, the students will choose their research project for the third term of MSc. The project will normally lead into a big project for their PhD, but with a reservation to switch to another one.

For more information & how to apply:

Contact Ms. Veena Dhulipala at v.dhulipala@imperial.ac.uk or add your name to our list and we will be in touch with more information.



Training offered by the Centre

PhD Programme

We provide 20 studentships over 2 cohorts for a 1+3 year PhD system. The first year is spent on an MSc in Quantum Engineering (QE) followed by three years of research.

Research Fellowships, Visiting Students, & Industry Partners

In addition to the PhD programme, the Centre will support junior fellowships (JFs), visiting students, and industry partners. This training includes career development as well as nationwide workshops and networking events.

The centre draws heavily from a diverse selection of world leading engineers & scientists pushing their research into the quantum domain. Using challenge-based learning and industry placements, it will produce graduates with the capacity to grow the UK's QT industry through start-ups and innovation.

Possible Research Projects

Research projects will be offered across all participating departments, many of them offered jointly with industry and QT centres across the country, and include:

- Inertial Navigation
- Rugged lasers and fibre based systems for compact atomic clocks
- Quantum Capacitance and current standards
- Single photon generation
- Precision sensing of electric and magnetic fields
- 6G mobile network with QT
- Quantum simulations on photonic chip
- Airport security imaging with QT

Affiliated Research Groups & Departments

Photon Science, Solid State Physics, Materials, Electrical Engineering, Chemistry, Civil Engineering, Laing O'Rourke Centre for Systems Engineering & Innovation, Dyson School of Design Engineering