

Faculty of Science

The five teaching and research departments in the Faculty of Science, plus its two units dedicated to research, provide a balanced representation of exact, physical, molecular and biological sciences.

The Faculty has a high research profile, which is essential to maintaining and enhancing its national and international reputation. Cutting-edge research, pure and applied, is undertaken across the Faculty, ranging from drug research and forensics to internet technologies, lasers and photonics. The Faculty is a key player in the several 'research pooling' initiatives being promoted by the Scottish Funding Council to harness the very best research being undertaken in the country. All Departments and research units have widespread contact with industry.

The Faculty has the largest population of research students in the University and is responsible for a very significant proportion of the University's total research income. In the 2008 Research Assessment Exercise Pharmacy & Biomedical Sciences was rated second and WestCHEM eighth in the UK in terms of research power.

There are numerous opportunities for multidisciplinary study across traditional departmental and disciplinary boundaries, both within the Faculty and with departments in other Faculties and external institutions. The University received the best possible outcome in the Quality Assurance Agency's review of Strathclyde's learning and teaching provision in 2010. This is evidence of the high quality of the University's portfolio of undergraduate and postgraduate programmes. Research activity feeds into the Faculty's postgraduate and undergraduate teaching, making it up-to-date and relevant.

How to Apply

Apply online via the postgraduate course page:
www.strath.ac.uk/courses/postgraduate

Contact

t: +44 (0)141 548 3362
 e: pgt@phys.strath.ac.uk

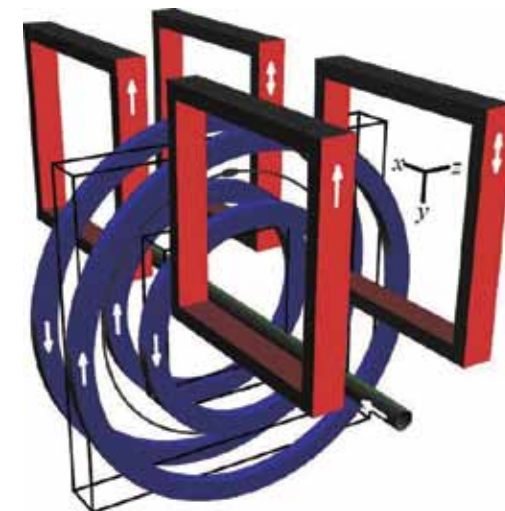
Department of Physics

www.strath.ac.uk/physics

MSc

QUANTUM INFORMATION & COHERENCE

Quantum phenomena are crucial for understanding the behaviour of matter and underpin the operation of many modern technologies such as lasers and atomic clocks. As technology advances it is becoming increasingly important for us to be able to harness quantum systems for a variety of applications. For example, using quantum systems to process information in an explicitly quantum manner can bring many advantages over conventional methods. Devices that implement quantum cryptography are already available and it is anticipated that we will be able to build quantum computers that cannot be simulated using existing global computing power.



The control of quantum systems is also playing a pivotal role in fundamental scientific studies, from high precision tests of scientific theories, to generating well controlled quantum condensates that can enable us to understand exotic states of matter such as superconductors and superfluids. The MSc course in Quantum Information and Coherence will provide a thorough foundation in these ideas, including courses on quantum information processing, coherent quantum phenomena, and their experimental implementation.



University of
Strathclyde
 Glasgow

The Course

The course aims to give students a comprehensive understanding of topics such as quantum information and computation, the experimental manipulation of quantum phenomena in a variety of situations, and the theoretical formalism that underpins these ideas.

The course builds on the expertise of academic staff, including a number of leading experimental and theoretical experts in quantum optics, atom optics, and quantum information.

The course can be used as a means of progression to a PhD in the field, or to enhance various theoretical and experimental skills that are highly prized in a number of employment sectors.

Course Structure

Two semesters of formal teaching are complemented by a four-month intensive project. The projects take place within the Quantum Optics, Quantum Information, Photonics, and Atom Optics groups in the Physics department. Opportunities for relevant project placements with external supervisors may also exist.

The taught component comprises:

- Quantum Information and Computation – how quantum phenomena may be used to process information in novel ways that outperform existing information processing technologies

- Experimental Quantum and Atom Optics – covers the key techniques used to generate and manipulate quantum coherence in real experimental systems
- Introduction to Quantum Optics and Open Quantum Systems – covers principles that can be used to describe all quantum coherent devices
- Transferable Research Skills Training – training in modern research methods and issues

In addition, students can choose an advanced level module with a significant optical or materials science component from other courses offered by department.

Assessment

The final assessment will be based on performance in examinations, coursework, a research project, and if required, an oral examination.

Duration of Course

12 months full-time or 24 months part-time

Entry Requirements

MSc: A first degree in physics or a mathematical/physical science subject with a sufficient exposure to quantum physics.

Candidates with relevant industrial experience are also welcome to apply.

English language: IELTS 6.5 is required for all non-English speakers.

Fees and Funding

For information on current fee levels, see: www.strath.ac.uk/tuitionfees

Scholarships may be available on a case by case basis; applicants should contact the department for details.

