



Durham
University



School of Engineering & Computing Sciences

Postgraduate study opportunities 2012/13

World-class taught and research degrees to PhD

Ranked 7th

for Engineering by *The Independent
Complete University Guide 2012.*



95%
of our computer science
research was of international
quality, with 65%
internationally excellent.

School of Engineering & Computing Sciences

The School of Engineering and Computing Sciences is housed in well-equipped buildings on the University's Science Site. The School provides a superb environment for high-quality teaching and research in engineering, computer science and software engineering. The School's central location means that it is within easy reach of the University Library, the City Centre, and all Durham colleges.

ABOUT THE SCHOOL

In the School of Engineering and Computing Sciences, teaching and research are tightly coupled. Academic staff are actively engaged in research at the frontiers of their subject. In the 2008 Research Assessment Exercise (RAE) all of our engineering research output was assessed as being of international quality, with over 70% being judged as internationally excellent or world-leading, and 95% of our computer science research was of international quality, with 65% internationally excellent.

The RAE panel particularly praised the high impact of the School's research. Our computer science groups were also commended on their strong research engagement with mathematics.

The School, together with Durham's college system, has an enviable reputation for supporting overseas students. It thrives on a diverse international student population which it is constantly seeking to expand. Support for students is high in the School's priorities and the RAE panel singled out the excellent research support and training arrangements for students in its report.

Many of the School's academic staff are internationally recognised as leaders in their specialist fields with wide-ranging national and international research collaborations, providing a steady stream of international visitors and regular research seminars. Within the University, the School undertakes collaborative research with many other departments including Mathematics, Physics, Chemistry, Earth Sciences, Education, Psychology, Applied Social Sciences, and Medicine and Health.



POSTGRADUATE FACILITIES

Postgraduate programmes make use of our state-of-the-art laboratory and computing facilities. A wide range of equipment is available including that suitable for in-situ measurement and testing. Experienced technicians are on hand to construct specialist equipment, and full use is made of the IT facilities available on the Science Site.

POSTGRADUATE RESEARCH DEGREES

The following research degrees are currently offered:

- MSc by Research. (A number of our students decide to use the MSc programme as a stepping-stone to further study at PhD level.) This is a one year (full-time) programme
- PhD. This is a three to three and a half year (full-time) research programme.

Topics for an MSc by research or PhD degree are decided upon by an academic member of staff. The expectation is for all researchers to produce original finds which can be published in leading international research journals.

AREAS OF RESEARCH

The School of Engineering and Computing Sciences undertakes research in a number of varied fields. Our work is organised through the five groups described below.

Mechanics Group

The Mechanics Research Group undertakes research into:

- Theoretical analysis and large-scale computational mechanics of complex structures (including the development of advanced parallel Finite Element codes)
- Innovative computational mechanics methods for wave propagation and fracture mechanics
- Interactive computational stress analysis and optimisation methods
- Experimental testing of engineering materials, including large scale structural elements and soils and other highly porous media involving reactive fluid transport
- Development of novel manufacturing processes, robotics and optimised engineering designs.

Energy Group

The Energy Research Group undertakes research into:

- Bio-engineering materials and devices especially for use in human joint replacement
- Mechanical and electrical engineering of systems for the conversion and distribution of energy using conventional and renewable sources
- Smart Grids technologies
- Engineering and economic aspects of operating and controlling transmission and distribution networks
- Grid and System integration of renewable energy
- Automotive, aerospace and industrial fluid mechanics.

Electronics Group

The Electronics Research Group undertakes research into:

- Nano-scale molecular and bio-electronic materials and devices
- Microelectromechanical systems and sensors
- Electronic tracking systems
- 3D electronics
- Mobile RF and ad-hoc communication systems
- Software evolution.

Algorithms and Complexity Group

The Algorithms and Complexity Research Group undertakes research into:

- Finite model theory
- Proof complexity
- Algorithmic and structural graph theory
- Randomised algorithms
- Constraint satisfaction
- SAT-solving
- Parallel computing, logic, and discrete mathematics.

Innovative Computing Group

The Innovative Computing Research Group undertakes research into:

- Software engineering
- Interactive media technology
- Technology enhanced learning.

Each year the School holds a Research Day, where research students present their work to not only the School community, but also to invited guests from academia and industry. We also organise regular research seminars for staff and students and host national and international conferences. In 2012, amongst other events, the School will host the ACME (Association of Computational Mechanics in Engineering) Conference.

To find out how to find a supervisor and/or a research topic visit our web pages at www.durham.ac.uk/ecs/ecs_research/research_degrees

TYPICAL ENTRY REQUIREMENTS FOR RESEARCH DEGREES

- Good 2:1 (or higher) Honours degree in a relevant engineering discipline (or Mathematics or Physics) or Computer Science as appropriate.

ENGLISH LANGUAGE REQUIREMENTS

- IELTS of 6.5 or equivalent.

We welcome applications from holders of international qualifications. For advice on the equivalency of international qualifications and further information on English language requirements, please contact our International Office at international.office@durham.ac.uk or visit their web pages at www.durham.ac.uk/international



FUNDING OPPORTUNITIES FOR POSTGRADUATE RESEARCH STUDENTS

With substantial contacts in industry, students at Durham are often supported through industrial sponsorship and we have a strong record of successful technology transfer through KTP (Knowledge Transfer Partnerships) projects. Those investigations not funded solely by industry are often supported through EPSRC, DTI and EU grants. Details of vacancies can be found on our web pages at www.durham.ac.uk/ecs

Each year a number of School scholarships are available to those candidates with exceptional academic records and appropriate aptitude. These scholarships can cover fees and living expenses (approximately £13.2k per annum) over the three year full-time study period. The University also has several additional funding opportunities for postgraduate students.

To find out what support you could be eligible to receive see the University online funding database at www.durham.ac.uk/study/postgraduate/fees/search

TAUGHT POSTGRADUATE PROGRAMMES: ENGINEERING **MSc in Communications Engineering**

Covering Radio and Digital Communications, Tele-Communications Networks, Digital Signal Processing and RF Circuit Designs, this programme will equip you with the skills and knowledge to take up responsible and challenging posts in academia or industry. The programme of 12 months' full-time study includes lectures, assessed laboratory work, computer classes and a major project. You will have access to advanced laboratory facilities in communications, digital signal processing (using Texas Instruments boards) and Agilent Technologies advanced design systems software.

MSc in New and Renewable Energy

By educating you in the key engineering aspects of New and Renewable Energy, this programme will help enable you to be appointed to challenging, senior level posts in industry or research in this rapidly expanding field. The programme consists of 12 months' full-time study comprising of lectures, assessed assignments, laboratories and computer

classes, and a major research and development project. Practical parts of the programme access up-to-date laboratories, which include fully instrumented test beds with various thermo-mechanical converters and electrical machines, power electronics testing, wind tunnels and computer modelling facilities.

MSc in Design and Operations Engineering

This Masters programme will help you develop high-level skills in a range of techniques and approaches in Engineering Design and Operations, thus allowing you to take up employment in a wide variety of engineering roles. The programme is modular, incorporating several unique in-company teaching day challenges and intensive in-company projects. It is assessed by assignment and written examination. This course is taught via lectures, laboratory work and a significant research investigation.



Our research is supported by a community of scholars, from the UK and overseas, and a resource framework that is comparable with other world-class centres of learning.

TAUGHT POSTGRADUATE PROGRAMMES: COMPUTER SCIENCE
MSc in Advanced Software Engineering (ASE)

The ASE course is designed to provide graduates from computing or related subjects with the opportunity to acquire the more advanced skills required for a career in software engineering. The core modules cover advanced programming and software engineering technologies, and lead on to modules on cutting-edge internet and computing topics.

MSc in Internet and Distributed Systems (IDS)

The IDS programme is designed for graduates from computing and related subjects who want to extend their knowledge and expertise. It provides an opportunity to acquire the more advanced skills required for a career in Internet and intranet-based information systems. The first module addresses advanced Java programming, and subsequent modules cover new technologies and related theory.

MSc in Software Engineering Management (SEM)

The SEM programme is designed for all graduates (and not necessarily those with a computer-based degree) who want a management career in the software industry. The core modules focus on software engineering and the management of software production, and there is a selection of other modules specifically oriented towards the Internet.

MSc in Internet Systems and e-Business (ISEB)

The ISEB programme is designed for all graduates (and not necessarily those with a computer-based degree) who want to train in modern computing. It provides an opportunity to acquire the skills required to pursue a career in Internet-based information systems. The programme begins with an introduction to programming and goes on to cover key aspects of software engineering and Internet technology.



TYPICAL ENTRY REQUIREMENTS FOR TAUGHT MASTERS PROGRAMMES: COMPUTER SCIENCE

- ASE and IDS: A good Honours degree, 2:1 or equivalent in Computer Science or a related degree plus receipt of two satisfactory references. All students are expected to have their own personal laptop
- SEM and ISEB: A good Honours degree (or equivalent) plus receipt of two satisfactory references. All students are expected to have their own personal laptop.

TYPICAL ENTRY REQUIREMENTS FOR TAUGHT MASTERS PROGRAMMES: ENGINEERING

- A good Honours degree in a relevant engineering discipline.

ENGLISH LANGUAGE REQUIREMENTS (ALL MSc PROGRAMMES)

- IELTS of 6.5 or equivalent.

We welcome applications from holders of international qualifications. For advice on the equivalency of international qualifications and further information on English language requirements, please contact our International Office on international.office@durham.ac.uk or visit www.durham.ac.uk/international

FUNDING OPPORTUNITIES FOR TAUGHT POSTGRADUATE STUDENTS

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“I’ve mostly enjoyed working alongside world-leading researchers and my supervisors have been really helpful.”
Xiaoying Zhuang, PhD Geotechnical Engineering.

APPLYING

A significant number of prestigious school scholarships are available for those who have achieved an exceptional academic performance in their undergraduate studies. Please contact the School for further information.

To apply for one of our MSc taught postgraduate programmes, visit www.durham.ac.uk/postgraduate/apply

CAREERS AND EMPLOYABILITY

For further information on career options and employability, including the results of the Destination of Leavers survey, student and employer testimonials and details of work experience and study abroad opportunities, please visit www.durham.ac.uk/ecs/postgraduate/employability

Name:
Xiaoying Zhuang

Home Country:
China

Postgraduate Course:
PhD Geotechnical Engineering

My current PhD supervisor recommended me this course; we met when he attended a seminar in 2006 at Tongji University in Shanghai, China where I did my Masters. We found our research interests had lots of overlaps so I decided to do a PhD with him.

My PhD research project is fully funded by a Dorothy Hodgkin Postgraduate Award. Through this course I’ve developed my skills and I’ve had the chance to publish academic papers based on my PhD research. I’ve enjoyed working alongside world-leading researchers and my supervisors have been really helpful with my research. I have access to all research facilities that I need as well as being able to learn in a stimulating environment for developing innovative ideas. The course is well-managed and can be tailored for every student.

With a Doctorate from a renowned world-class university I hope it will give me a great starting point for further development in academia. I plan to have some postdoctoral experience and then consider applying for a lectureship in a university.

Durham University attracts students with strong and diverse backgrounds, being part of the postgraduate community here has enabled me to meet them and learn a lot from them and to share their experiences.



Further information and contact details

Further information on all postgraduate programmes can be found at www.durham.ac.uk/ecs/ecs_prospective_students/postgraduate or alternatively telephone, email or write to us and we will forward further information to you:

Postgraduate Admissions (taught courses)

Tel: + 44 (0)191 334 1708
Fax: +44 (0)191 334 2408

Engineering Science taught programme

Email: engineering.msc@durham.ac.uk

Computer Science taught programme

Email: engineering.msc@durham.ac.uk

Postgraduate Admissions (research courses)

Tel: + 44 (0)191 334 2471
Fax: +44 (0)191 334 2408

Engineering and Computer Science research programme

Email: engineering.pgadmissions@durham.ac.uk

Write to:

Postgraduate Admissions

School of Engineering and Computing Sciences
Durham University
Science Laboratories
South Road
Durham DH1 3LE
United Kingdom

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