

Warwick's School of Engineering is one of the leading engineering schools in the UK. We offer a range of specialist taught Master's courses and research degrees. The School has a strong research profile placing it in the top ten General Engineering departments in the 2008 Research Assessment Exercise. The School has three Fellows of the Royal Academy of Engineering among its staff and more than 20 members at Fellow level in the Engineering professional bodies.

The School has research strengths in Energy, Systems Engineering, Power Electronics, Information and Communication Technologies, Biomedical Engineering, Fluid Dynamics and Civil Engineering. We have worldwide collaborative links with academic partners such as MIT, Boston University, Max Planck Institute, ETH Zurich, Harbin Institute of Technology, Monash University and Tianjin University. Industrial links include companies such as Converteam, the UK's largest renewable energy technology company, Arup, Thales and Morgan Est.

We have recently invested some £2.5 million in a refurbishment of the Engineering building, providing new teaching and research facilities, including purpose-built chemical processing and biomedical engineering laboratories in addition to modern learning spaces. We have also invested in state-of-the-art equipment to enhance our strong research record in power electronics and sustainable heating and cooling technology.

SCHOOL OF ENGINEERING

www.warwick.ac.uk/go/engineering

RESEARCH DEGREES

MASTERS BY RESEARCH (MScR)
MASTER OF PHILOSOPHY (MPhil)
DOCTOR OF PHILOSOPHY (PhD)

TAUGHT MASTER'S DEGREES

MSc IN MECHANICAL ENGINEERING SYSTEMS
MSc IN ENERGY AND POWER ELECTRONIC SYSTEMS
MSc IN ELECTRONIC SYSTEMS
MSc IN ELECTRONIC SYSTEMS WITH SENSOR TECHNOLOGY
MSc ELECTRONIC SYSTEMS WITH COMMUNICATIONS
MSc IN BIOMEDICAL ENGINEERING
MSc IN ENGINEERING SYSTEMS
MSc IN TUNNELLING AND UNDERGROUND SPACE

CONTACT DETAILS

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RESEARCH GROUPS

Civil Engineering

Research usually involves combined experimental and numerical approaches. The group is active in transferring research findings into design guidelines and industrial applications and has strong links with research groups in the UK, Europe and SE Asia. Specific areas of interest include: water engineering, the environment and sustainability; structures and materials; soil mechanics and underground construction processes; sustainable and appropriate technologies.

Electronics, Power and Microsystems

This group performs cutting-edge research in a broad range of electronic and electrical areas. It covers diverse topics including: fabrication of novel microsensors; design of specialist semiconductor devices; advanced power management systems; ultrasonic sensor techniques; measurements for security and food testing. The group has recently completed clean room facilities and is home to a number of substantial industrial collaborations in addition to containing the team responsible for the Warwick electronic nose.

Fluid Dynamics

This is one of the largest groups of its kind in the UK working on fundamental and applied research in computational and experimental fluid mechanics. Problems involving the dynamics of fluids are encountered in a vast number of different fundamental and applied contexts. Previous and current research projects include the design of car bodies and aircraft wings; modelling air flow within and around buildings; investigating the cooling systems in car engines.

Information & Communication Technologies

This group works at the leading edge of a range of areas in communications and signal processing. These span topics of some diversity from the propagation of microwaves through intelligent optical system design to image processing. Nevertheless, they are bound together by core mathematical and experimental methods. Recent work includes free space optical communications; advanced coding and modulation; 3D object reconstruction; ultrawideband communications; frequency selective surfaces; intelligent systems engineering design of wireless protocols; nanoscale communications.

Sustainable Energy Engineering and Design

This is a centre of excellence undertaking research in low-carbon energy technologies and design essential to underpin a sustainable built environment. Research is focused in four principal areas: heat pumps and heating/cooling technology; energy storage and phase change materials; lightweight building structures and solar energy. A range of cutting-edge thermal energy technologies are investigated including adsorption refrigeration/heat pump systems, thermal energy storage, enhanced heat transfer and solar collectors. Moreover, activity in the area of sustainable chemical technologies is expanding rapidly.

Systems, Measurement and Modelling

The group encourages synergistic activities across these three topics and stimulates opportunities for new interdisciplinary research work. The activities of the group are divided into three laboratories that reflect its major research strengths, namely: Biomedical and Biological Systems; Precision Engineering and Surfaces; Stochastic and Complex Systems. Each member of the group is associated with one of the three laboratories but most are also associated with a second, underlining the interdisciplinary nature of their work.

RESEARCH DEGREES

MSc BY RESEARCH (MScR)

**Standard Duration: 1 year full-time,
2 years part-time**

MASTER OF PHILOSOPHY (MPhil)/ DOCTOR OF PHILOSOPHY (PhD)

**Standard Duration: 3 years full-time,
5 years part-time**

The coverage of most branches of engineering within a single large School makes it easy to pursue interdisciplinary research. Although there are no interim examinations, students are expected to attend lecture modules on appropriate topics. Submission of regular progress reports is required, monitored by means of progress panels, established for each student. Students are encouraged to give seminars, publish their findings and to undertake laboratory demonstrating work.

Recent thesis areas include: 3D boundary layers in fluids; genetic algorithm optimisation of optical communication systems; high precision angle calibration for spherical measurement systems; optimal design of two-pin arches; non-contact imaging systems.

APPLICATION FACT FILE (RESEARCH DEGREES)

Entry Requirements

UK 2:i degree or equivalent.

English Language Requirements

IELTS 6.5, TOEFL (iBT) 92 or equivalent

Application

Applications should be made online at www.warwick.ac.uk/go/pgapply

Tuition Fees

(2011/12 fees. Please note fees for 2012/2013 will be published online in Spring 2012.)

Home/EU: Full-time £3,900, Part-time £2,340

Overseas (band 2): Full-time £15,460,
Part-time £9,276

Funding

Departmental funding is available, see the website for further information. Details of the Chancellor's Scholarships and other funding opportunities are available on the Graduate School website:

www.warwick.ac.uk/go/graduateschool



Mohammed Atari
PhD candidate
School of Engineering

“After completing my Master’s in Biomedical Engineering at Warwick I obtained a Vice-Chancellor’s Scholarship to pursue my PhD in Biomedical Systems Modelling and Identification.

Warwick was my first choice to continue my postgraduate studies. The University has an outstanding reputation in teaching and research. In addition, the School of Engineering has certainly met all my expectations: the laboratories in the School are well equipped for research across the broad spectrum of engineering that is covered by the research groups within the School. Moreover, I am offered the privilege of working research leaders and pioneers in my area of interest.

Activities taking place on campus are highly dynamic and interactive. What I have enjoyed most is the genuine international community and the sheer diversity of people I have been able to interact with at Warwick from over 120 different countries.

Certainly, I am having a great time at Warwick and as I come to the end of my studies, I am hoping to pursue a career in the Pharmaceutical Industry. The knowledge and skills I have developed throughout my experience here have given me confidence in my career prospects.”

TAUGHT MASTER'S DEGREES

MSc IN MECHANICAL ENGINEERING SYSTEMS

Standard Duration: 1 year full-time

The programme aims to impart state-of-the-art knowledge and understanding of Mechanical Systems, preparing you for careers in advanced technology within a study environment that fosters stimulation and allows you to advance your knowledge and skills.

This degree offers routes in Computational & Fluid Dynamics and Mechanics & Instrumentation. This covers a wide range of techniques and solutions to fluid flow problems; plastics and ceramics; finite element method; ultrasonic and optical sensors; laser measurements and medical applications.

Recent graduates have gone on to senior technical positions within engineering industries, further academic study, consultancy work throughout the world, senior management positions.

MSc IN ENERGY AND POWER ELECTRONIC SYSTEMS

Standard Duration: 1 year full-time

The degree prepares you for careers in advanced technology, delivering advanced modules informed by the active research expertise of the academic staff. This course covers renewable energy systems; power electronic technologies and power semiconductor devices; modelling energy systems and power electronics using software (MATLAB/Simulink, Dymola, Simplorer); applications to energy and power electronic systems related areas.

Students following this programme can expect to progress to higher level research studies in Renewable Energy or Power Electronics-related areas, ultimately leading to post-doctoral and other academic appointments. This degree also provides the opportunity to study concepts highly relevant for subsequent employment in the Renewable Energy, Electrical Power, Power Conversion and Power Electronics industries.

MSc IN ELECTRONIC SYSTEMS WITH SENSOR TECHNOLOGY

Standard Duration: 1 year full-time

Delivering advanced modules, informed by world-leading research within the School, this MSc prepares you for careers in industry and academia. This programme enables you to develop an understanding and experience modern electronic system and sensor design, with particular emphasis on instrumentation, micro-sensors, actuators, optical sensors, wireless communication and ultrasonics. The course covers both the micro-fabrication processes employed to construct these devices and the signal processing methods to analyse data through industrial standard tools.

A high proportion of graduates have gone on to work within the electronic systems and sensor field, covering automotive, aerospace, manufacturing and sensor companies. Furthermore, many have progressed to higher level research studies in Electronic Systems and Sensor Technologies, ultimately leading to post-doctoral and other academic appointments.

MSc IN ELECTRONIC SYSTEMS

Standard Duration: 1 year full-time

This programme enables you to develop your understanding of modern Electronic Systems, focussing on system modelling, instrumentation, power electronics, microsystems, wireless communication, optical sensors, ultrasonics and signal processing. Covering many of the fundamental methods, the MSc enables you to acquire new skills with practical experience within fields as diverse as medicine, automotive and space.

Many of our students have progressed to employment within the electronic systems and sensor field, covering automotive, aerospace, manufacturing and power generation. Others have gone on to higher level research studies in Electronic Systems.

MSc ELECTRONIC SYSTEMS WITH COMMUNICATIONS

Standard Duration: 1 year full-time

Aimed at those interested in careers in advanced communication technologies, this MSc enables you to develop expertise in an expanding area with particular emphasis on the operation, and future directions of, optical communication systems; the performance of wireless communication systems and current trends; signal processing using digital filters; specialised knowledge in areas related to photonics, communication systems and networks.

Many students following this programme have progressed to higher level research studies in Communications and Signal Processing. The degree also provides the opportunity to study concepts highly relevant for subsequent employment in the electronic systems, communications engineering, and IT-related industries.

MSc IN BIOMEDICAL ENGINEERING

Standard Duration: 1 year full-time

This programme enables you to develop expertise in an expanding area with particular emphasis on: systems modelling for application to processes in biomedicine; compartmental modelling in physiology and medicine; properties and design of materials employed in medical applications; signal processing and data analysis techniques for physiological data.

This programme also provides the opportunity to study concepts highly relevant for subsequent employment in the biomedical engineering, biotechnology and pharmaceutical industries.

MSc IN ENGINEERING SYSTEMS

**Standard Duration: 1 year full-time,
2 years part-time**

This flexible programme offers advanced modules across a broad spectrum of subject areas, allowing you to tailor your course to your specific interests. Module options range from electronics (power, communications and instrumentation), through to mechanical engineering (aerodynamics, fluid dynamics and micro-systems).

Students following this programme have progressed to higher level research across a broad spectrum of Engineering subject areas and disciplines. The degree covers concepts highly relevant for employment in the engineering sector across a wide variety of fields, including power, electronic, communications, IT, automotive, aerospace and basic technology companies.

MSc IN TUNNELLING AND UNDERGROUND SPACE

**Standard Duration: 1 year full-time
Places available: 25**

This specialist course has been developed with the British Tunnelling Society (britishtunnelling.org.uk) and has the support of a number of industrial partners. The course is suited to those working or wishing to work in the tunnelling industry and to Civil Engineering graduates wishing to satisfy the Further Learning requirements for Chartered Engineer status with the ICE (subject to accreditation).

The course includes modules in tunnel design, construction and methods, geotechnics, health and safety, structures, and a range of optional modules. The MSc includes a 45 credit project. The tunnelling industry is experiencing a skills gap so job prospects for suitably qualified specialist engineers are good. There are major tunnelling projects planned around the world over the next ten years.

APPLICATION FACT FILE (TAUGHT MASTER'S DEGREES)

Entry Requirements

MSc in Mechanical Engineering Systems

Normally, you should have obtained at least a second class honours degree in a suitable branch of Engineering, or the equivalent in a suitable Science/Engineering degree.

MSc in Energy and Power Electronic Systems

Minimum requirement of a 2:ii degree in an Engineering-related subject or equivalent.

MSc in Engineering Systems and MSc Electronic Systems with Communications

Minimum requirement of a 2:ii degree in an appropriate physical science subject or equivalent.

MSc in Biomedical Engineering, MSc in Electronic Systems and MSc in Electronic Systems with Sensor Technology

Minimum 2:ii in an appropriate physical science subject or equivalent. Applicants with a Life Science degree with appropriate level of background study in mathematics are also considered.

MSc in Tunnelling and Underground Space

Applicants should normally possess a first degree in Civil Engineering, Mining Engineering or similar of at least 2:ii standard or the equivalent.

English Language Requirements

IELTS 6.5, TOEFL (iBT) 92 or equivalent

Application

Applications should be made online at www.warwick.ac.uk/go/pgapply

Application Deadline

31st July

Tuition Fees

(2011/12 fees. Please note fees for 2012/2013 will be published online in Spring 2012.)

Home/EU: Full-time £6,080, Part-time £3,040
Overseas: Full-time £16,000, Part-time £8,000

Funding

Details of funding opportunities are available on the Graduate School website: www.warwick.ac.uk/go/graduateschool