ELECTRONIC and DIGITAL SYSTEMS
MEng  
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Electronic systems are integral to nearly every aspect of 21st-century life. Spectacular advances in technology, design and development are enabling increasing capabilities to be squeezed into ever smaller electronic devices. For example, consider the revolution in the design of portable phones, cameras and music players – they can now be one in the same device. New approaches within optical computing and nanotechnology provide the potential for even greater advances.

This MEng course produces high calibre engineers who understand and can then exploit such advances in electronic technology. Graduates will possess a unique skillset, with technical expertise and understanding of electronic fabrication, the processing of digital information, reprogrammable hardware and intelligent software tools – all of which give them an ideal platform to launch a successful career in the electronics and digital sectors.

Course Structure
Core subjects in mathematics, electronics, electrical engineering, computing and embedded systems are studied in years 1 - 3 to provide a strong foundation for study in later years.

Specialist topics, relevant to the digital and electronics sector, are chosen in Years 4 & 5. Topics include:

- analogue circuit design for interfacing with real-world signals
- digital circuit design to produce logic systems such as traffic lights control, to the management of an aircraft flight controls
- microcontroller and microprocessor systems for applications in renewable energy technologies, robotics, transport systems, telecommunications, radar and sonar and electrical power control
- bioinformatics and the recognition of signature patterns from images, speech and even DNA
- sensing and control systems ranging from simple manufacturing applications on the stabilisation of aircraft wings or Formula 1 cars
- digital signal design for mobile and wireless communications, mobile, advanced video surveillance and 3DTV
- design of cooperative information and communication systems
- intelligent distributed data processing systems for seamless information management and communication

This degree is fully accredited by the Institution of Engineering & Technology, meaning graduates can gain ‘chartered’ (CEng) status after relevant industrial experience.
An individual project in Year 4 and group project in Year 5 provide technical challenges and facilitate the development of planning, project management and teamworking skills.

The Department has extensive industrial academic collaborations and a range of opportunities exist for work placements and overseas study within the UK and overseas. Examples include internships with Texas Instruments.

Course Syllabus

**Year 1 – Core Engineering & Science Skills**
You will learn about the design and analysis of analogue and digital circuits, the principles of software engineering, physical electronics and processing systems. You also study Maths for computing and engineering, and business management.

**Year 2 – Core Engineering & Technology Skills**
The study of analogue and digital electronics continues, enhanced by an introduction to basic concepts in signal processing. Further study of physical electronics is undertaken, along with classes on electromagnetism and engineering design and manufacture. You will also study advanced Maths and engineering computing; all supported by practical and team-working skills programmes.

**Year 3 – Specialist Engineering Skills**
You develop specialist engineering skills through a bespoke curricula that includes the following topics:

- **Signals & Communications Principles**
- **Analogue & Digital Electronics Design Techniques**
- **Embedded Systems Design**
- **Engineering Innovation and Management**
- **Engineering Analysis, Principles & Methods**
- **Instrumentation Systems**
- **Project Management Methods**

**Years 4 & 5 – Engineering for your Professional Future:**
Here your studies focus on key topics within the electronics and digital sector. Your personalised curriculum is achieved through a selection of classes combined with individual and group project work. You also have the opportunity to broaden and enhance your studies by taking classes from Science and Business departments, and/or studying abroad.

**Years 4 – Advanced Engineering Skills**
You undertake a significant individual project to enhance your technical and project management skills, and develop specialist engineering knowledge by choosing classes that cover the following topics:

- **Advanced Analogue Electronics Design**
- **Communications Networks**
- **Control Principles and Techniques**
- **Digital Signal Processing**
- **Information Transmission and Security**
- **Multimedia Systems**
- **Optical Communications Systems**
Year 5 – Professional Engineering Skills
To further enhance your technical expertise and professional skills, a major group project and selection of classes from the following advanced topics, are completed:

- Advanced Digital Signal Processing Techniques
- Microcontroller Systems and Design
- Control of Industrial Processes
- Digital Signal Processing Implementation
- FPGA-based Embedded System Design
- Mobile and Wireless Communications
- Multimedia Signal & Image Processing
- Robotics Design

Teaching and Assessment
A blend of student-centric methods, including interactive lectures, small group problem-solving tutorials, practical laboratories as well as industrial visits and seminars by professional engineers are used throughout all years of study. The programme ensures that you develop not only technical engineering and computing expertise, but also, and equally importantly, communication, project management, leadership and entrepreneurial skills.

There is a wide range of assessment methods, including assignments, examinations and individual and group-based projects. Both class delivery and assessment make use of web-based and multimedia facilities.

The course typically consists of around 10 lectures, five tutorial/problem-solving classes and three practical classes per week. Students also undertake around 20 hours of self-study.

“During my degree, I was part of a group that designed, built and tested a satellite de-orbiting technology. Working on this, I experienced the time frame of a real project – from initial project proposal, planning and manufacture, to testing and deployment – all of which were invaluable experience for my career. I joined Clyde Space straight after graduating.

Thomas Parry
MEng Electronic & Digital Systems
Scholarships and Work Placements
Our department runs one of the UK's largest industry-supported Scholarships Programme, providing annual bursaries of up to £5000, as well as help with books, software and paid summer internships with a range of well known, international organisations such as Rolls-Royce, ScottishPower and AMEC.

We are the only Department in Scotland in the IET Power Academy and have been hand-picked by several leading global engineering organisations, such as BP and Siemens, to participate in their scholarship schemes. The Programme, open to students on this degree, includes:

- S6 Bursaries – open to eligible S6 Scottish applicants
- Royal College Awards – a bursary for international applicants
- FM Bruce Scholarships
- AMEC Electrical Engineering Scholarship
- Lloyd’s Register Foundation Scholarship
- BP Scholarships
- IET Power Academy
- Engineering Excellence Scholarships with MacTaggart Scott, ScottishPower and Wood Group

The Department
The course is delivered by the Department of Electronic & Electrical Engineering, which is internationally renowned for its teaching and research quality, and has excellent ratings for student satisfaction and graduate employment. It consistently gains first-class ratings in the independently published UK University league tables.

EEE has a truly international profile in Electronic and Digital Systems teaching and research. It is the recipient of the first Xilinx endowed Chair in Digital System Design while its Texas Instruments Chair in Signal Processing is the first to be endowed outside the USA.

Extensive experience of staff in the design of real-world analogue and digital systems, and their research work in sensors and systems ensures that this course is industrially applicable, producing high-calibre graduates well equipped to succeed in today's competitive job market.
Contacts
Academic Selector
t: 0141 548 2097/2471
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Find out more ...
visit the University website at www.strath.ac.uk

Careers
Graduates are ideally positioned for rewarding and exciting careers in technical and managerial roles in a diverse range of sectors including:

- video surveillance systems
- multimedia and 3DTV systems
- intelligent electronic & digital systems
- aerospace and automotive industries
- consumer electronics entertainment
- audio and speech processing
- mobile, broadband and wireless communications
- remote sensing, defence and security
- renewable energy systems
- biomedicine

Our graduates have been employed in top electronics companies, including household brand names such as Nokia, Samsung, BT and Vodafone, as well as companies producing chip and system solutions such as Xilinx, Texas Instruments, Agilent, Freescale, Siemens and Philips.

In Scotland, the design engineering market for electronics is strong with companies such as Wolfson Microelectronics, Linn Products and SelexGalileo being internationally recognised. Add these to the many SMEs in Scotland and across the globe and it is clear that job market is particularly vibrant and that this degree provides considerable career opportunities.

the place of useful learning
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Information current at August 2014. Please consult the University website for the most up-to-date information. The University of Strathclyde is a charitable body, registered in Scotland, with registration number SC015263.