Aston University

Welcome to Aston University and School of Engineering and Applied Sciences

EXCELLENT
DIFFERENT
DISTINCTIVE
ASTON

Contents

Founded in 1895 and a University since 1966, Aston is a long established research-led University known for its world-class teaching quality and strong links to business and the professions. Professor Alec Cameron became Vice Chancellor of the University in 2016, building on a strong legacy left by the Baroness Brown of Cambridge.

Outstanding graduate employability

Aston has been a leading university for graduate employment success for over 25 years. More than 80% of Aston graduates go on to a graduate level job within six months. The majority of Aston students choose to take an integrated placement year or year abroad, making them very attractive to employers. We have strong relationships with national and international graduate employers, as well as smaller and local employers. These relationships are extremely important and make a real contribution to graduate employability.

Career focussed programmes

Aston's close and established links with business, the public sector and the professions ensure that our career focussed degree programmes are inspiring, challenging and constantly updated to equip students with essential work-related skills and experiences.

Excellence in teaching and research

We are committed to high quality teaching and academic excellence, ensuring we provide the highest standard of education to our students. Aston has an excellent reputation for research which shapes and improves lives. We're proud of the quality of our research and the real world applications developed as a result – it makes a substantial and beneficial difference to people, organisations and society.

Aston's four academic Schools offer a range of undergraduate and postgraduate degree programmes, and also work with the public and private sectors to develop tailored Foundation Degree programmes.

International

Aston University is a popular choice for international students. We recognise and welcome the important academic contribution and cultural diversity international students bring to our university environment. Students from over 120 countries study at Aston University each year

Aston University is ranked 29th in the world and 9th in the UK as one of the 'most international universities in the world.' (The Times Higher World University Ranking, 2016-17).

Birmingham – one of Europe's liveliest cities

Birmingham is internationally recognised as a leader in leisure, entertainment, shopping and sport. It is an international centre for business, commerce and industry, housing numerous UK and overseas banks and law firms. Birmingham attracts 25 million visitors each year and contributes billions to the national economy through manufacturing and engineering.

The University campus is located in the city centre making it very accessible to an extensive network of motorways and railways.

A green, sustainable campus

Located in the heart of a vibrant city, our 40 acre campus houses all the University's academic, social and accommodation facilities for our 14,355 students. All staff have the opportunity to contribute to our sustainability agenda and practices.

Welcome from Professor Alec Cameron, Vice Chancellor & Chief Executive

Dear applicant

The HE sector is currently experiencing an unprecedented scale and pace of change, combined with a high degree of ambiguity and uncertainty. Those universities able to adapt swiftly to a changing and increasingly competitive market will thrive. As a mid-sized, focused university Aston has the advantages of agility, innovation and team working that some other institutions do not. Our integrated placement year, our applicable, exploitable research, and our commitment to widening participation all help to make Aston distinct.

The 2014 Research Excellence Framework results recognised the quality and impact of Aston research. This research directly influences medical breakthroughs, advancements in engineering, innovation, policy and practice in government, and the strategies and performance of local and international business. The Times Higher Education REF rankings placed Aston University 35th in the UK and 78% of our submissions were judged to be World Leading or Internationally Excellent.

Teaching quality and the student experience are an important focus at Aston. We are committed to doing all we can to address the needs of students and to assisting them to achieve their career ambitions on graduation.

We very much look forward to receiving your application and learning more about how you would contribute to Aston's continuing success.

Professor Alec Cameron
Vice Chancellor & Chief Executive

University values

All staff are expected to demonstrate / promote the University's values and expectations, which are an integral part of our 2020 strategy and underpin the culture of the University. Our vision is to be the UK's leading University for business and professions, where original research, enterprise and inspiring teaching deliver global impact. More information about the university's values is available at www.aston.ac.uk/staff/working/dare-to-succeed/values/

In addition, our leaders are expected to be accountable, help to execute strategic visions of the University, share and set clear expectations that inspire those around them. Further information on our leadership expectations can be found at:
http://www.aston.ac.uk/EasySiteWeb/GatewayLink.aspx?alId=158042

Staff expectations

All staff are expected to;

- Be committed to delivering high performance
- Recognise and praise the high performance of others
- Remain open to new ideas and seek to act quickly for positive change
- Develop themselves, and support the development of others
- Be ambitious, for themselves, their teams and the university
- Engage with others, listen, observe and communicate
- Focus on excellent customer service, finding solutions and saying "yes"
- Make reasoned decisions without fear of blame
- Engender trust through their own actions
- Be fair in all matters

The School of Engineering and Applied Science

The School of Engineering and Applied Science was formed in 1998 as part of a University-wide academic reorganisation from a departmental and faculty structure to a School structure. The internal structure of SEAS is set up as a matrix, which is intended to encourage collaborative research and the formation of teaching links between previously unrelated areas. A member of staff may therefore choose to join a research group whose composition is markedly different from that of the Subject Group through which other professional activities are arranged.

School Structure

SEAS is led by the appointed Executive Dean, Professor Sarah Hainsworth. The Executive Dean is supported by a Deputy Dean (Dr Trevor Oliver) and four appointed Associate Deans with the following areas of overall responsibility:

- Learning and Teaching
- Postgraduate Programmes: Dr Aniko Ekart
- Undergraduate Programmes: Dr Sukhvinder Phull
- Research: Professor David Webb
- Enterprise: Dr Kate Sugden

Underpinning this structure are six Subject Groups, with considerable discipline-specific responsibilities, each with a Subject Group Head, as listed below:

Chemical Engineering and Applied Chemistry (CEAC)

- Professor Brian Tighe

Computer Science (CS)

- Professor Peter Sawyer

Electrical, Electronic and Power Engineering (EEPE)

- Professor John Williams

Engineering Systems and Management (ESM)

- Professor Ed Sweeney

Mathematics (Maths)

- Professor David Saad

Mechanical Engineering and Design (MED)

- Dr Phillip Davies

Each Subject Group has devolved responsibility for the design, delivery and operation of particular programmes through the Programme Management Committees. The bodies report through three key committees - Management Committee, Teaching Committee and Research Committee, ensuring that the individual disciplines are sustained and developed within the single integrated structure of the School.

Research

The School of Engineering and Applied Science specialises in research that addresses future societal needs: sustainability, bio-energy, knowledge engineering, complex systems studies, superfast high bandwidth communications and assistive technologies in biomedicine. We want to address basic questions with high human impact:

- How can we simulate model, predict and control uncertain complex systems with partial knowledge?
- How do we engineer superior optically based communication and sensing technologies?
- How can we apply chemistry to construct materials and products for use in biotechnology, nanotechnology and medicine?

- How can we harness biosciences as a source of renewable energy and raw materials for industry? How can we create a more sustainable future?
- How can we engineer improved health systems and technologies?

From new hardware technologies to developments in algorithms for smart data processing, our Engineering research is at the core of modern society developments. Photonics research focuses on ultrafast optical transmission and processing in fibre designed optic components. Flexible and powerful principles of fibre optic sensing are also being used to detect physical and chemical properties of living cells. Synthetic chemistry is being utilised to construct novel 'designer' materials that interact with biological molecules, cells and more complex biological systems. Biomedical engineering research is investigating smart systems for monitoring and diagnosis. Sophisticated cross-disciplinary mathematical and computational approaches are being developed for transportation, environmental, eHealth and communication domains, and work on thermal biomass conversion applies chemical engineering science and technology to the design and development of new products and processes that will enable society to have less harmful environmental impacts.
The School of Engineering and Applied Science has a long tradition of exploring innovative ways to engage students in learning. The newly established Aston STEM Education Centre (ASEC) encourages, supports and promotes this work with the intention of developing greater understanding as to 'what works' and 'why'.

Research groups

There are a number of primary research groups (see www.aston.ac.uk/eas/research/groups) in the School, including six Research Institutes, with some that are long established and are internationally renowned, organised as follows:

Chemical Engineering and Applied Chemistry
- Polymer and Advanced Materials
- Catalysis and Materials

Computer Science
- Computer Science
- Non-linearity and Complexity (with Mathematics)
- ALICE: The Aston Lab for Intelligent Collectives Engineering
- Systems Analytics Research Institute

Electronic, Electrical and Power Engineering
- Adaptive Communication Networks Research
- Aston Institute of Photonic Technologies
- Nanoscience
- Power Engineering & Power Electronics

Engineering Systems and Management
- Aston Logistics and Systems Institute

European Bioenergy Research Institute
- Thermal processing
- Catalysis
- Algal cultivation and processing
- Bioenergy systems and markets

Mathematics
- Non-linearity and Complexity Research Group (with Computer Science)

Mechanical Engineering and Design
- **Aston Institute of** Materials Research
- Biomedical Engineering
- Sustainable Environment

Aston STEM Education Centre

REF 2014

Research at Aston has continued from strength to strength and recently we were ranked 35th in the UK by the REF, with 78% of our submissions to the Research and Excellence Framework being ranked as world leading or internationally excellent.

Electrical and Electronic Engineering and Computer Science and Informatics **all received** a maximum 100 per cent for Research Impact **–** the real world effect their 4* and 3* academic research has upon society, communities and businesses.

The research activities within the School of Engineering and Applied Science continue to develop, maintaining our emphasis on student and staff inclusion and a drive to innovate and engage with the economy.

Building on this, our plan is to continue our support for improving our students' and staff research experience, and to develop new research areas to complement our existing peaks of excellence.

Research Facilities

Across the School there are facilities dedicated for student use, and all students are supplied with individual computers and working space. In addition to local computing infrastructure, all staff and students have access to the School's existing 144-processor Cray XD1 and a 256 node SGI cluster computer.

There have been significant enhancements to the research infrastructure in the School with a total value in excess of £18M.

- The European Bioenergy Research Institute benefitted from a £18 million investment jointly funded by the ERDF and the University. This has established a brand new state of the art research facility with laboratory and pilot plant facilities in thermal biomass processing and catalysis.
- The Aston Institute of Photonic Technologies (AIPT) was created in 2012 in recognition of the world leading status of the photonics research at Aston University over the past 20 years, and has benefited from over £4 million of strategic investments in staff and infrastructure over the past decade including a 100 m^2 clean room constructed and equipped through AWM and SRIF funding (£400k);
- Grid Edge, a spin out company formed to develop Artificial Intelligence (AI) software that enables commercial and public building owners to intelligently control and optimise their building's energy loads. , was named "Best Start-Up"at the 2016 Silicon Canal Tech Awards. The software was developed through the £1.1 million ITHECA project.

In addition to this, the School has a range of specialised facilities which are resourced by each separate research or subject group through direct contract funds to support specific research activities in EAS.

Funding for Research

The School's research income has increased significantly over the last 2 census periods and has averaged £9.6M per annum since the 2010/11 academic year, with continued growth planned in future years. Research income originates from diverse sources - including the UK Research Councils (in particular EPSRC), EU (FP 7, Horizon 2020) the Royal Society/Royal Academy of Engineering, Innovate UK and the Leverhulme Trust.

A significant proportion of our research activity is either directly sponsored by, or undertaken in close partnership with industry or the local community.

The School's Computer Science Industry Club, a holistic, strategic partnership between industry and academia, offers industry the opportunity to access student expertise through tailored research projects. The Club has so far created a research portfolio in excess of £1 million and offered students 50 industry placements and 10 internships.
The European Bioenergy Research Institute (EBRI) works with SMEs through to multi-national companies on bespoke research for their organisation.

A £1.1m commercial R&D project, supported by Innovate UK, has successfully commissioned the UK's first permanent electric vehicle to grid (V2G) charging system. The project uses the EBRI site to develop three new commercial offerings for the project industry partners. EBRI is working with Cenex Ltd on the delivery of the vehicle to grid system and on investigating the various business models associated with V2G and intelligent EV charging.

IP across the School's research areas is exploited in partnership with the University's Research and Enterprise Office, which manages patenting, licensing, and setting up of spin-out companies based on selected research innovations.

Athena Swan

The Athena SWAN Charter, funded by the Equality Challenge Unit and the UKRC, aims to encourage institutions to recruit, retain and promote women in SET in higher education and research.
The School of Engineering and Applied Science holds a Silver Award from the Athena SWAN Charter in recognition of its support for women in STEMM disciplines. Aston University also holds an Athena SWAN Bronze award and is in the process of applying for Silver status.
These awards reflect the School and Aston's excellent practice in, and on-going commitment to, the career progression of female academics and researchers in STEMM subjects.

For more information, visit our website www.aston.ac.uk/seas

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