UNIVERSITY OF BATH
Department of Electronic and Engineering

Lecturer/Senior Lecturer/Reader in Electronic and Electrical Engineering

Background Information

The University of Bath

The University, which received its Charter in 1966, is situated on a campus of 200 acres, surrounded by open countryside one and a half miles from the centre of Bath. Communications are rapid and easy, with London being less than one and a half hours away by train. The University is structured around 15 Departments which are organised into three Faculties; the Department of Electronic and Electrical Engineering is in the Faculty of Engineering and Design. The University has around 16,000 students and competition for places is keen, resulting in a high quality intake. Research at the University is similarly highly regarded internationally and the University of Bath is ranked in the top 200 in the world in the latest Leiden Ranking and QS World University Rankings. Nationally, Bath ranks highly in many of the newspaper league tables, see http://www.bath.ac.uk/corporate-information/rankings-and-reputation/. The University has many world-class sporting facilities and is the UK's top sports university in The Times & The Sunday Times Good University Guide 2018.

The Department of Electronic and Electrical Engineering

The Department has a long history of education and research and was the first department in the UK to introduce the now-standard MEng degree. There are currently about 630 undergraduate students, approximately 60 MSc students, over 80 research students and staff, and in excess of 30 academic staff. Electronic and Electrical Engineering at Bath is consistently ranked highly in the national league tables and performs very strongly in the National Student Survey, for example it was ranked 4th in the UK in the NSS 2017. The Department is located in Building 2 East, at the centre of Bath's attractive campus. 2 East houses well equipped undergraduate teaching laboratories, computer rooms and research laboratories. Additional research laboratories, including clean room facilities, are located elsewhere on campus. Over the 2015/16 academic year a £350k investment was used to create new student project activity spaces, including PCB flow lines and rapid prototyping facilities. Further laboratory refurbishments are ongoing, as part of an ongoing investment in infrastructure and include a major refurbishment of our main undergraduate teaching laboratories over summer 2018. The teaching and research laboratories are supported by a Technical Manager, with a further six technicians working across all the laboratories.

The Department offers seven undergraduate programmes:

- Electrical and Electronic Engineering
- Computer Systems Engineering
- Electrical Power Engineering
- Electronic Engineering with Space Science and Technology
- Electronic Systems Engineering
- Integrated Mechanical and Electrical Engineering (a joint programme with the Department of Mechanical Engineering)
- Robotics Engineering (new programme with first intake in 2018)

The first five programmes are available as MEng/BEng while the Integrated Mechanical and Electrical Engineering and Robotics Engineering run as MEng only. The annual undergraduate intake is ~130 students across all programmes and the standard is high, with current offer being AAA for all programmes. Further details on the structure and content of our undergraduate programmes can be found at:
http://www.bath.ac.uk/catalogues/2018-2019/ee/ee-proglist-ug.html.

In addition to its undergraduate courses, the Department offers the following postgraduate programmes:

- MSc Electrical Power Systems
- MSc Mechatronics (joint with the Department of Mechanical Engineering)
- MSc Electronic Systems Design
- MSc Robotics and Autonomous Systems (new programme with first intake in 2018)
- MPhil/PhD by research

Several of the programmes in our MSc portfolio have been recently developed, in line with the University's increased focus on postgraduate education.

Research in the Department is divided into Research Centres. We have three established centres:

- Centre for Advanced Sensor Technology (CAST)
- Centre for Space, Atmospheric and Oceanic Science (CSAOS)
- Centre for Sustainable Power Distribution (CSPD)

and supply many of the core members of the recently formed

- Centre for Biosensors, Bioelectronics and Biodevices (C3Bio), including its Director

Other staff are members of or have links with

- Centre for Nanoscience and Nanotechnology.
- Centre for Materials and Structures
- Institute for Advanced Automotive Propulsion Systems

91% of our research activity was graded as either world-leading or internationally excellent in the Research Excellence Framework 2014 and we have been awarded in excess of £14 million of external funding over the last five years. Further information on the research of individual staff members can be found at: https://researchportal.bath.ac.uk/en/organisations/department-of-electronic-electrical-engineering.

Research in the Centres can be further divided in to the following Research Themes (Theme Champions indicated in *italics*):

Autonomous systems and robotics
Dr Tareq Assaf, Dr Uriel Martinez-Hernandez, Dr Benjamin Metcalfe, *Prof Peter Wilson*, Dr Dingguo Zhang
Our research focuses on the development of technology that improves robotic hardware (sensors, actuators, power systems, processing), robotic software (data processing, imaging, localization and mapping, artificial intelligence) and a scientific understanding of how these techniques can be applied to real world problems in robotics (industry, agriculture, environmental monitoring, medical, transport, space).

Biosensors and bioelectronics
Dr Pedro Estrela, Dr Benjamin Metcalfe, Dr Despina Moschou, Dr Paulo Rocha, Prof John Taylor
Our research focuses on the development of electrical, electrochemical and optoelectronic biosensors and chemical sensors for biomedical, environmental and defence applications. Wes develop electronics for biosensor device integration, biosensor arrays, bio-inspired systems, biomedical instrumentation and neuron recording. We have strong collaborations in place with end users (clinical and industry) and researchers from a range of disciplines.

Electronic Circuits and systems

Dr Sinan Li, Dr Benjamin Metcalfe, Dr Ali Mohammadi, Dr Xiaoze Pei, *Prof John Taylor*, Prof Peter Wilson

We undertake research into Integrated Circuits (IC) across a variety of areas including bio-electronic interface and amplifier circuits, mixed signal sensor interface and data conversion circuits, reconfigurable digital circuit design (FPGA) and reliable circuits for extreme environments. We also carry out work on power electronics (especially wide bandgap device based), converters and drives for application areas such as electric vehicles, aerospace and autonomous systems.

Imaging systems

Dr Adrian Evans, Prof Cathryn Mitchell, Dr Stephen Pennock, *Dr Manuchehr Soleimani*

We study imaging systems over a range of scientific fields, including tomographic imaging for industrial processes, space science and medical applications, ground penetrating radar systems, and image processing and classification. We develop state of the art tomography software for these imaging applications as well as tomography sensors and hardware. We work closely with many industrial end-users, national and international research organisations.

Nanotechnology and nanomaterials

Dr Matthew Cole, Dr Ali Mohammadi, *Dr Philip Shields*

We develop wide bandgap semiconductors materials, nanostructures and devices, MEMS/NEMS and vacuum nano-electronics. Our research focuses on applications of nanostructures in lighting, nonlinear optics and quantum technologies, as well as novel MEMS/NEMS applications and chemical vapour deposition methods. Our facilities include wafer-scale nano-imprinting techniques, epitaxy growth reactors, world-class nanofabrication clean rooms and advanced materials and device characterisation equipment.

Radio systems and radio science / Remote sensing

Dr Ivan Astin, Dr Robert Burston, Dr Biagio Forte, Dr Martin Fullekrug, Prof Cathryn Mitchell, *Prof Nicholas Mitchell*, Dr Kerianne Nicoll, Dr Robert Watson, Dr Corwin Wright

Our research focuses on ground and space based sensors with an emphasis on radio techniques including tomography and data assimilation. Applications areas include the study the Earth's atmosphere, oceans and space environment. We research the effects of the natural environment on the propagation of the radio and acoustic waves used in communication, navigation and remote-sensing systems, such as satellite navigation and timing systems (including GPS).

Smart energy systems and services

Dr Antonio De Paola, Dr Roderick Dunn, Dr Chenghong Gu, *Prof Furong Li*, Dr Ran Li, Dr Kang Ma, Dr Xiaoze Pei, Dr Francis Robinson

Our research is focused on advanced modelling and analyses for energy systems and energy customers to deliver cutting-edge solutions for smart grids, smart markets and smart services. Our research addresses critical technical and commercial challenges to reduce the cost of our low carbon transition, whilst taking advantage of ICT technologies, big data (smart grids and smart meters), integrated energy systems (electrical, gas, heat and cooling) and high temperature superconductors (fault current limiters and energy storage).

General Information for Candidates for Appointment

The academic structure of the University is as follows:

Faculty of Engineering and Design
Architecture and Civil Engineering; Chemical Engineering;
Electronic and Electrical Engineering; Mechanical Engineering

Faculty of Humanities and Social Sciences
Economics; Education; Health; Politics, Languages & International Studies;
Psychology; Social and Policy Sciences.

Faculty of Science
Biology and Biochemistry; Chemistry;
Computer Science; Mathematical Sciences;
Pharmacy and Pharmacology; Physics

School of Management

Several departments have developed their own self-financing centres for research and short courses. The University has an enviable reputation for the standard of its intake, its graduate employment record, its research, and its location in a World Heritage City.

As presently established, the University employs about 2,500 staff, and has an annual turnover of nearly £200 million. Considerable use is made of computerised systems covering many administrative procedures including financial reporting and budgetary control, student records, human resources, and the planning and resourcing processes.

Location and Facilities
The University is based on a fine downland site of about 200 acres at Claverton Down, less than two miles south-east of the city centre. The University has been developed on this site over the last 50 years, so that all the buildings are relatively new and have been designed or refurbished to modern standards. Physical working conditions are generally pleasant, with many buildings commanding attractive views. The facilities on campus include a grocery shop, newsagent, post office and bookshop, and sub-branches of three banks. There is also a medical centre and dental practice, while those with sporting and other social interests will find a variety of clubs and societies open to them. The University has extensively revamped its Creative Arts provision and the English Institute of Sport in the south west is now based at the University in extensive new facilities.

In addition to those buildings used for research, teaching and for administration, there are residential buildings on campus in which almost all first-year students reside. Around five hundred further residential places are located in the city. Full-time members of staff may apply to become resident Tutors within the on- or off-campus residences – further details are available from the Department of Human Resources.

Westwood Nursery, which is on site at Claverton Down, offers competitively priced nursery care for babies and children of staff and students from the age of 6 months until they start school. The nursery is open throughout the year and children may attend on a full or part time basis. Places are, of course, subject to availability and there are long waiting lists for some age groups – you are encouraged to contact the Nursery for up to date information. For children of primary school age the University play-scheme aims to organise provision during some half terms and other holidays.

Appointments in the University are offered subject to the University receiving a satisfactory report on your health from the University Medical Officer. This is normally undertaken on the

basis of a review of a confidential medical questionnaire. Smoking of any kind is prohibited in all University buildings.

The City of Bath is recognised as being architecturally one of the finest in Europe and is a very pleasant place in which to live. The communications network is good. Trains run half-hourly to London and the journey time is about 1 hour 30 minutes. The M4 motorway runs 10 miles north of Bath and provides a convenient road network to London, the Midlands, Wales and South West England.

Further information: please visit our website at www.bath.ac.uk.