Chair/Reader in Neuroengineering/BioSignal Processing

College of Science and Engineering

Ref: SEN00339

At Leicester, we’re going places. Ranked in the top 20 universities in Britain, our aim is to climb further. A commitment to high quality combined with an inclusive academic culture is our hallmark; we are "elite without being elitist".

We wish to appoint a Professor in Neuroengineering or Biosignal Processing. A strong preference will be given to candidates with research strength in the analysis, recording or modelling of biological signals, particularly those related to neural activity, but other specializations will be considered.

You will have an outstanding academic record including an excellent publication record and a reputation for attracting funding to support your research. You will be expected to provide strong leadership to deliver our ambitious research plans. We will offer you the opportunity to join our lively Department, which has an international outlook and recognised strengths in research and teaching.

The University

There’s never been a more exciting time to join us. At the University of Leicester we are enjoying research success on a world stage and gathering the awards and plaudits to match.

A judge in a recent awards ceremony described Leicester as “elite without being elitist”. We are proud to be elite. But we are at least as proud to be an inclusive and progressive university. This commitment to high quality, an inclusive academic culture and belief in the synergy of teaching and research are our hallmarks. We believe that teaching is inspirational when delivered by passionate scholars engaged in world-changing research that is delivered in an academic community that includes postgraduate as well as undergraduate students.

Our approach to research yields great rewards. Our research impact, measured by citations per academic, is the sixth highest in the UK. Our success in the 2008 Research Assessment Exercise saw Quality Related research income rise by 18% placing us firmly amongst Britain’s top 20 research universities by this measure. The RAE also revealed that Leicester is home to Britain’s top-rated research department – Museum Studies – which has the highest concentration of world class research of any department of any discipline in the UK.

For a University that believes teaching and research are synergistic, it is pleasing that the National Student Survey reveals the quality of our teaching is amongst the highest in the country. Since the launch of the survey in 2006, Leicester has consistently featured amongst the top-10 universities in England for student satisfaction. The Sunday Times recently described Leicester as "top... amongst mainstream multi-faculty universities for student satisfaction".

THE Awards Winner
Currently a University of 23,000 students, with a turnover of £260m and 3,800 colleagues, our future is bright. Our Strategic Vision describes our plans to invest a billion pounds in our estate as we transform our campus. Already consistently ranked in the top-20 universities in Britain, by 2015 we aim to rise further to become top-10.

Leicester is the most inclusive of Britain’s top-20 universities with the greatest proportions of students from under-represented groups.

As a group of talented individuals we are more diverse than ever and stronger for it. At Leicester we are proud of our distinct approach, our achievements and our ambitious plans. If you share our approach join us.

We are proud holders of the Athena Swan Bronze Award which recognises and celebrates good practice for employment in science, engineering and technology (SET) in higher education and research. The award reflects our commitment to the advancement and promotion of diversity and equality. We are actively seeking Silver and Gold awards. http://www.athenaswan.org.uk/html/athena-swan/

College of Science and Engineering

Pro Vice-Chancellor and Head of College: Professor Martin Barstow, BA PhD CSci CPhys F.InstP FRAS

The College comprises seven research-led departments: Chemistry, Computer Science, Engineering, Geography, Geology, Mathematics, Physics & Astronomy. Together, these departments teach approximately 20% of campus-based undergraduate students, undertaking diverse programmes of study, from human geography through a range of laboratory-based subjects to engineering. They also generate more than a third of the University’s research income.

Although each department has a distinct identity, there are a number of major interdisciplinary research activities, typified by centres in Space Research, Climate Change Research, Mathematical/Computational Modelling, Neurosciences and Advanced Microscopy. Researchers within the College have international reputations and collaborations with researchers throughout the world, making it an exciting environment for both research and teaching.

Our students benefit from following best practice, working alongside leaders in their fields. Approximately a quarter of our undergraduates go on to study for a higher degree. Our graduates are much sought after by employers - either by going directly into employment in the broad area of their degree subject or pursuing successful careers in diverse areas such as industry, education, commerce, IT and the public sector.

Further information about all departments within the College can be found on the College website at: http://www2.le.ac.uk/colleges/scieng

Department of Engineering

Head of Department: Professor Helen Atkinson BA, MA, PhD, Drhc, FREng, CEng, FIMMM, FIMechE, DIC.

The Department of Engineering has 30 lecturing staff (including 9 Professors) supported by 7 management and administrative staff and 30 technical and experimental staff. Engineering is one of the largest departments at Leicester and has approximately 550 undergraduate students, 80 taught postgraduate students, and 80 postgraduate and postdoctoral researchers.

The Department is internationally renowned for its research in the areas of:
• Bioengineering
• Control and Instrumentation
• Electrical and Electronic Power
• Radio Systems
• Mechanics of Materials
• Thermofluids and Thermoacoustic Engineering
• Embedded Systems

In the 2008 Research Assessment Exercise the Department submitted over 90% of its academic staff. The quality profile, as judged by the RAE, showed that 90% of the research was internationally recognised, internationally excellent or world leading in terms of originality, significance and rigour. Several research led appointments have been made in recent years, including a number of chairs, and this has resulted in research groups of international standing with strong leadership and a research base of highly talented staff.

In terms of teaching, the Department offers MEng and BEng degrees in:

• Aerospace Engineering
• General Engineering
• Mechanical Engineering
• Electrical and Electronic Engineering
• Communications and Electronic Engineering
• Software and Electronic Engineering

Each course is accredited by the relevant professional institutions. The Department also offers MSc courses in:

• Advanced Control and Dynamics
• Advanced Engineering
• Advanced Materials Engineering
• Advanced Mechanical Engineering
• Advanced Electrical and Electronic Engineering
• Embedded Systems and Control
• Information and Communications Engineering

The Department is fully committed to teaching excellence. Leicester is one of the highest ranking institutions in the National Student Satisfaction Survey.

The Department has an extensive range of industrial partners including: BAe Systems, Rolls Royce, Jaguar, Mercedes-Benz, Alstom. Many undergraduate and postgraduate projects are carried out in collaboration with industry. The employment record for new graduates is strong.

For additional information see http://www.le.ac.uk/engineering/
Bioengineering Research Group

The Bioengineering research group has an international reputation for work on modelling and processing of signals from biological systems, especially applied to the heart and nervous system. Our basic research is complemented with industrial and clinical applications.

The group comprises 4 academics and about 20 postdoctoral researchers and PhD students and has attracted substantial funding from the UK research councils, EU programmes and charities (about £2m of active research grants).

A key area of research is the development of signal processing techniques for assessment of cardiac arrhythmias, with emphasis on non-invasive techniques using the ECG and Body Surface Potential Mapping using microcomputer, Graphics Processing Units and Digital Signal Processor-based systems. Another area of research is on computational neuroscience and the analysis of neurophysiological data. Within this area, we investigate new methods of analysis of neural signals based upon time-frequency decompositions, statistical mechanics, dynamical systems - including chaos and synchronization phenomena. These methods are routinely applied to electrophysiological and EEG data for the analysis of visual perception and memory, learning and visuo-motor transformations. We also work on the analysis of single cell recordings in humans. Recordings are carried on in epilepsy patients who are studied with intracranial recordings in order to determine the focus of epileptic seizures for potential curative surgery. Another line of research deals with the understanding and applications of models of neural mechanisms of sensory processing to real-world behaving artefacts. Current work involves understanding the neural processing of chemical information in insects and mammals, in particular the moth S. littoralis and nematode worm C. elegans, as the basis for new technologies for localising and communicating infochemicals.

Further information is available at http://www2.le.ac.uk/departments/engineering/research/bioengineering and from Prof Rodrigo Quian Quiroga Ph/fax: +44 116 252 2314/2619 – Email: rqqq1 [at] le.ac.uk.

Job Purpose

You will be responsible to the Head of Department of Engineering and will undertake research, scholarship, teaching, and administration and other activities supporting the work of the Department and developing and enhancing its reputation, both internal and external to the University. The duties of academic staff are flexibly organised and assigned by the Head of Department.

There is a general expectation that as a Professor you will develop a rounded knowledge of the duties and activities undertaken within the Department and an appreciation of the organisational arrangements through which the University conducts its business.

Your role may develop as research interests mature and extend. Research groups grow, and teaching may alter to reflect student demand. You must be willing to absorb rapidly any new areas of expertise needed for the effective performance of such changed duties.

You will be an excellent researcher, as demonstrated by research funding, publications in leading peer-reviewed journals, and other factors of esteem. You will also be someone who can undertake high quality teaching in Engineering.

Specifically the aim of this appointment is: to complement and support existing areas of research within the Department and to further strengthen the research base of the Department by maintaining a high funded research project profile.

The appointee will be a senior member of the Bioengineering Research Group. The Group currently consists of four academics, and about 20 postdocs and PhD students. It is allied with the Centre for Systems Neuroscience, which is led by Professor Rodrigo Quian Quiroga, who also Heads the
Bioengineering Group within the Department. The University has invested more than £1m in the Centre infrastructure over the last two years.

**Principal Accountabilities**

**Research**

- To undertake individual and collaborative research of high quality, consistent with the Departmental objective of all academic staff attaining an international research profile
- To secure external sources of funding to support research, either individually or in partnership with colleagues within and outside the University that will deliver outputs of international excellence
- To publish research outputs and to disseminate the results of research and scholarship in internationally recognised journals
- To manage research projects within the University, including their financial control and to supervise research assistants and research students
- Consistent with the resources available and departmental and other obligations, to attend and present research findings and papers at academic and professional conferences, and to contribute to the external visibility of the Department and University
- To ensure that all research activities undertaken are in compliance with the ‘Research Code of Conduct’ operated by the University
- To provide research leadership and mentoring to other researchers in their field and across the Department
- To advise and support the Head of Department in the setting of Department research targets and policy

**Teaching**

- To give lectures, seminars, tutorials and other classes, as appropriate, in support of the required teaching obligations, and to supervise or co-supervise project work by undergraduate, MSc and PhD students
- To ensure that student feedback on teaching is sought, through questionnaires and other means, and to respond constructively to such feedback and to advice from peers
- To maintain a broad knowledge of up-to-date research and scholarship in relevant fields to ensure that teaching meets the standards expected within a research-led University
- To co-operate with colleagues in the review and development of the curriculum and in the design and launch of new courses, new degrees or other academic awards where appropriate
- To undertake academic duties (e.g. setting examination papers, marking, invigilation and pastoral support of students) required to sustain the delivery of high-quality teaching and an excellent student experience
- To support and comply with the University and Department teaching quality assurance standards and procedures, including the provision of such information as may be required by the Department or the University
Administration

- To undertake such specific Department roles and management functions as may be reasonably required by the Head of Department (or such person to whom responsibility may have been delegated)
- To attend Department meetings and to participate in other committees and working groups within the Department of Engineering, the College of Science and Engineering, and the University, to which appointed or elected
- To participate in relevant professional activities
- To engage in continuous professional development, for example, through participation in relevant staff development programmes
- To undertake, subject to agreement of the Head of Department and/or the University as appropriate, external commitments, which reflect well upon and enhance the reputation of the University
- To ensure compliance with health and safety requirements in all aspects of work

The duties and responsibilities outlined here are not intended to be an exhaustive list, but provide guidance on the main aspects of the post.

Qualifications, Knowledge and Experience Required

Essential

- A PhD in Engineering or related degree*
- Demonstrated expertise and outstanding research achievement/potential in Engineering or related scientific areas*
- Expertise that complements or enhances existing areas within the department and/or themes within the College*
- A demonstrated ability to generate external funding (through research grants, contracts and other sources) to support research programmes*
- Demonstrated academic leadership
- A record of successful PhD supervision*

Desirable

- Evidence of national and international esteem such as journal editorships or membership of external panels
- Membership and/or evidence of activity with professional engineering or scientific institutions (preferably chartered engineer registration)*

Skills, Abilities and Competencies

Essential

- Demonstrated ability to initiate, develop, and deliver high-quality research with an excellent record of research achievement underpinned by a record of publication in high quality peer-reviewed journals in Engineering*
Evidence of a commitment and the ability to teach competently at undergraduate and postgraduate level in lectures, tutorials and seminars and to supervise postgraduate students *

Be able to identify areas of research collaboration and demonstrate the ability to form collaborations

Ability to lead and manage research

Good effective communication (oral and written*) and presentation skills

Evidence of an ability to work independently and as part of a team on research and teaching programmes *

Ability to plan, organise, implement, and deliver programmes of work

Desirable

Evidence of competence in administration

Good interpersonal skills

Competence in IT and familiarity with a computerised environment

(* Criteria to be used in shortlisting candidates for interview)

Informal Enquiries

Informal enquiries are welcome and should be made to the Head of Bioengineering Group, Professor Rodrigo Quian Quiroga (0116 252 2314/3249 rqqg1@le.ac.uk)

Applications

For further information and to apply on-line, please visit our website: http://www.le.ac.uk/joinus

The closing date for this post is midnight on 20 May 2013.

Interviews are expected to take place on 28 June 2013.