

Academic Role Profile

Job Title:	Reader
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Responsible to:	Director of ATI
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Responsible for:	Research and support staff employed on projects for which the post holder is Principal Investigator, and students on programmes and awards that are the responsibility of the post holder.
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Job Summary and Purpose
To make a significant contribution to the advancement of own specialist area which is recognised at national and international level. To undertake research in line with the Faculty's research strategy and to contribute to undergraduate and postgraduate teaching programmes.

Main Responsibilities/Activities
<p>To develop the research activities of the Faculty and the University (in collaboration with others in the discipline where appropriate) by:</p> <p>Demonstrating leadership in research, including postgraduate research supervision.</p> <p>Planning, co-ordinating and leading research activities in accordance with a specific project plan through a research team or a group of staff involved in research. Managing the financial and physical resources associated with the research activities. Supervising and guiding the work of staff and research and doctoral students on own specialist area.</p> <p>Leading innovative research proposals and submitting funding bids, winning support for them and planning the research to be taken, self-contained item or as part of a broader programme. Obtaining and sustaining research funding.</p> <p>Sustaining an extensive track record of published research findings in high quality journals, or other media and at internationally recognised conferences.</p> <p>Maintaining an expert reputation in own subject area and providing advice and guidance to staff and students.</p> <p>Engaging in external academic activities in accordance with the Faculty's research strategy at a national level and international level. Such activities will include membership of committees of academic and professional bodies, external examining, editing journals and contribution to professional networks, national and international meetings, societies and bodies (including governmental bodies).</p> <p>Sustaining and developing professional expertise and maintaining the requirements for registration with the appropriate body (<i>for academics with clinical links only</i>).</p>

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To support the teaching activities of the Faculty by:

Leading/developing teaching methods, designing undergraduate and postgraduate programmes, pursuing new teaching approaches.

Teaching, training and supervising students (including research students), tutor industrial/professional training year students and external examining according to own area of subject specialism.

Setting/marking programme work, practical sessions, supervisions, fieldwork and examinations according to own area of subject specialism.

Taking part in activities such as validating and examining in relation to the University's associated institutions.

To engage in scholarship by:

Continually updating knowledge and understanding in the field or specialism. Extending, transforming and applying knowledge acquired from scholarship to teaching, research and appropriate external activities.

To undertake pastoral care of students by:

Using listening, interpersonal and pastoral care skills to deal with sensitive issues concerning students and provide support. Appreciating the needs of individual students and their circumstances. Acting as personal tutor and giving first line support. Taking responsibility for dealing with referred issues for students within own educational programmes, and providing first line support for colleagues, referring them to sources of further help if required.

To contribute to the efficient management and administration of the Faculty, the University and the wider academic community by:

Performing personal administrative duties such as research group leader and roles associated with teaching programmes, as allocated by the Head of Faculty and contributing to the general life and work of the University.

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Person Specification

The post holder must have:

It is essential that the post holder possesses a higher professional qualification, normally a doctoral degree

Demonstrated outstanding qualities and achievements in scholarship and research at a national and international level

Significant academic publication recorded in refereed journals

Evidence of leadership in research, including postgraduate research supervision

Evidence of a record of sustained research funding

Evidence contributions to conferences, professional meetings and societies at an international level and evidence of achievements in other external activities at an international level

Evidence of high quality teaching at undergraduate and postgraduate level

Relationships and Contacts

The post holder will take a leading role in the setting of strategic objectives for their research theme. New appointees will be assigned a senior colleague to guide their development and aid their integration into the Faculty and into the University. Teaching and administrative duties will be allocated by the Head of Faculty, and will include roles related to both taught programmes and research activities across the Faculty.

Special Requirements

To attend national and international conferences for the purpose of disseminating research results. To be able to participate in residential field work, in the UK or overseas, according to own area of subject specialism.

To lead major funding bids, which develop and sustain research support for the specialist area and advance the reputation of the Faculty and University.

The post holder is expected to work outside normal office hours as necessary.

All staff are expected to:

- Positively support equality of opportunity and equity of treatment to colleagues and students in accordance with the University of Surrey Equal Opportunities policy.
- Help maintain a safe working environment by:

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- Attending training in Health and Safety requirements as necessary, both on appointment and as changes in duties and techniques demand
- Following local codes of safe working practices and the University of Surrey Health and Safety Policy
- Undertake such other duties within the scope of the post as may be requested by your Manager.

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Addendum

This document provides additional information relating to both specific aspects of the post/Faculty and any post specific person specification criteria. The information contained within this document should always be read in conjunction with the accompanying generic Job Purpose.

Job Title:

Reader in Microwave Semiconductor Devices and Modelling

Background Information/Relationships

The post holder is expected to develop and lead the research activity in Microwave Semiconductor Devices and Modelling in the Advanced Technology Institute (ATI) at the Department of Electrical and Electronic Engineering. This is a strategic investment to build upon existing strengths and to help develop interactions between already well-established research groups in identified areas, and to bridge the activities in the ATI to those in 5GIC and NPL.

Faculty:

The University of Surrey is organised into three Faculties. The Faculty of Engineering and Physical Sciences (FEPS) is the largest Faculty and comprises the Division of Civil, Chemical & Environmental Engineering, The Division of Mechanical, Medical and Aerospace Engineering and the Departments of Electrical & Electronic Engineering, Computing, Mathematics and Physics. The Faculty is built on the core engineering disciplines of aeronautical engineering, civil engineering, chemical engineering, electronic engineering and mechanical engineering, together with the core scientific disciplines of computing, mathematics and Physics. Within these fields we enjoy a reputation for excellence in research and teaching, allied to a strong enterprise culture and an unrivalled record of graduate employment. Our members of academic staff are well respected, both national and internationally, amongst the many areas of academia and industry that we interact with. We believe strongly in the principle that a university should contribute to the cultural wealth of society by developing the basic sciences, whilst also developing the technology which will improve our overall quality of life.

Department of Electrical and Electronic Engineering:

The Department of Electrical and Electronic Engineering at Surrey is one of the strongest single discipline entities in the UK. Its research is managed through four research centres comprising the **Advanced Technology Institute** focusing on device materials research and nanotechnology, the **Surrey Space Centre** internationally famous for its pioneering efforts in micro/nano satellite engineering, **Centre for Vision, Speech and Signal Processing** conducting internationally leading research in multimedia signal processing and machine perception, and the **Institute for Communications Systems** leading the UK innovation in mobile and satellite communications, and home to the 5G Innovation Centre for industry-academic collaboration in future mobile technology. The Department has been ranked in the top-5 peer reviewed assessment of research quality in Electronic Engineering for all cycles since the assessment was introduced, with the 2nd largest proportion of world-leading and internationally excellent research in REF2014. Its pre-eminence in the discipline has much to do with the research Centre specific critical mass groupings encouraged over the last 3 decades. The extent and success of the Departmental research programme is evident from the annual research spend which exceeds £20m, half of which is contributed by grant income.

The Department currently has 45 academic staff and more than 650 students who are studying on a range of programmes from BEng/MEng, through MSc, to PhD. All undergraduate and MSc programmes have been accredited by IET for five years. Our undergraduate students benefit from being able to take Surrey's Professional Placement Training Year. The successful professional placement scheme is now being extended to a new type of postgraduate taught programme, EuroMaster, which runs over 2 years and, apart from a major 90 credit project, includes training in business studies and management. The Department enjoys a high annual NSS

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score. Our teaching and research activities are supported by a range of well-equipped laboratories and computing facilities. Its academic activities are steered by the Departmental Industrial Advisory Board. Recently the Department was bestowed **Regius Chair in Electronic Engineering** for its truly outstanding academic performance over many years, and was awarded, by the European Association of Electronic Industries, the 2013 Elektra “Department of the Year” Prize for its recent accolades which include a £35m Government/industry grant for research and innovation in 5G communications.

Advanced Technology Institute

The ATI consolidated the University of Surrey’s research activities in materials and devices for future electronics and photonics applications. We specialise in light-matter interactions and nano-scale designed devices for technology applications. Major facilities for fabrication and characterisation, previously dispersed around the University, were co-located, substantially enhanced, and complemented by new capabilities notable in nanoscale fabrication, nanobiology, medical sensors and supercomputer modelling. The ATI is an example of ‘under one roof’ multidisciplinary research, housing 150 researchers including engineers, physicists, material scientists, biologists and chemists. Approximately half of these researchers are PhD students. The ATI also supports an MSc in Nanotechnology and Renewable Energy, and a large number of undergraduate research projects.

Focussing initially on the interface between traditional strengths in photonics and solid state electronics, the ATI’s research portfolio has broadened considerably in terms of the materials and phenomena studies, and increasingly addresses the perceived ‘grand challenges’ in energy (in particular photovoltaics and LEDs) and nano-scale materials including manufacturing. The ATI’s activities are divided into four research groups: nanoelectronics, photonics, ion beams and theory & advanced computation. Science and technology on the nanoscale, technological applications of quantum science, and advanced computer simulation are some of the cross-cutting themes uniting the groups.

Research in the ATI is inherently multidisciplinary. Research group members are primarily members of the Department of Electrical and Electronic Engineering or the Department of Physics, with academic staff taking full teaching roles in these Departments. More recently manufacturability is addressed with joint appointments in CPE. There are cross-campus collaborations, such as a link to environmental sciences on renewable energy sources. There is a strong collaboration with industry, providing access to industrial expertise and routes to exploitation. Four companies have been spun-out of the ATI to date, contributing to the University’s aims of generating employment and benefiting the local and national economy.

Area of Research

We are looking for an outstanding candidate who has the enthusiasm and energy to build on the research activity in Microwave Semiconductor Devices and Modelling at the ATI, Surrey. You will be able to develop and communicate a clear vision of this activity that best fits the needs of the University and the wider microwave community. You should have extensive experience of the relevant international research programmes, and the ability to secure funding from both research councils and industry to deliver research in line with the proposals you will generate. Industrial experience and the ability to form collaborative links with industrial partners are desirable, as in an understanding of international industrial standards.

The Department has a particular interest in developing new semiconductor device concepts, with comprehensive modelling methodologies which enable one to explore the interaction between device physics, electromagnetic theory and thermodynamics. Such considerations are becoming increasingly significant as devices become ever smaller and are required to operate at ever

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higher frequencies and powers. The initial focus of the research is expected to relate to power amplifiers from the perspective of improving performance in respect of efficiency, output power and linearity. Of particular interest is the development of efficient procedures which can be executed using readily available hardware. Subsequently, the expectation is that these approaches will be developed so that they can be applied to other microwave devices and structures. The theoretical work will be complemented by experimental investigations and the successful applicant will be expected to work closely with the relevant individuals and teams, both within Surrey, and also the wider research community. Necessarily this will involve close interactions with Industry.

Our expectation is that this activity will build upon a range of existing activities at Surrey and will lead to increased interactions between already well-established research groups in identified areas. These groups include the Surrey Space Centre, the Centre for Communications Systems Research and the Advanced Technology Institute, all of whom have strong international reputations in their respective fields and an enviable track record of close collaboration with Industry and technology development. For example, the spin-out company SSTL arose from the Surrey Space Centre and is recognised as the world leader in small satellite design and manufacture. The relevant areas include (but are not limited to) the development of better numerical methods for fast simulation, the modelling of high frequency transport processes in semiconductor nanostructures, systems level modelling and power amplifier designs optimised for space applications. A willingness to contribute to this wider agenda is an essential requirement of the role.

Person Specification

This section describes the sum total of knowledge, experience & competence required by the post holder that is necessary for standard acceptable performance in carrying out this role. This is in addition to the criteria contained within the accompanying generic Job Purpose.

	Essential/ Desirable
A higher research degree (PhD)	E
World class research performance (incl. an exceptional and continuing publication record, and a proven and continuing strong track record of external research grant income generation)	E
A proven track record in academic leadership	E
A proven track record in successfully supervising PhD students	E
Evidence of high quality teaching	E
Evidence of scholarly contributions to conferences, professional meetings and societies at an international level, and evidence of achievements in other external activities at an international level	E
Excellent communication, inter-personal and networking skills	E

Key Responsibilities

This document is not designed to be a list of all tasks undertaken but an outline record of any faculty/post specific responsibilities (5 to 8 maximum). This should be read in conjunction with those contained within the accompanying generic Job Purpose.

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1. Make a significant contribution to the Faculty's strong research profile and to appropriate postgraduate and undergraduate teaching programmes.
2. Develop teaching methods at UG and PG level, as appropriate, by designing programmes and/or modules, and pursuing new teaching methods.
3. Take an active role in teaching at UG and PG level, as appropriate, by planning, delivering, setting/marking coursework/examinations, supervising/training design projects and professional training students and providing feedback to students.
4. Lead a programme of research by managing associated financial/physical resources and recruiting/supervising/guiding/mentoring the work of staff and postgraduate students in own specialist subject area.
5. Sustain a good track record of journal publications in appropriate peer-reviewed journals and/or monographs.
6. Maintain a good level of research funding; contribute to planning and coordinating large multi-disciplinary or multi-Faculty bids involving collaborative groups.
7. Enhance reputation in own subject area by engaging in external activities at national level such as contributions to professional networks, meetings, conferences, societies, professional and/or government bodies, editing/refereeing journals and papers.
8. Perform administrative duties throughout the Department/Faculty/University as are recognised by the University in roles commensurate with the remit of an academic (ie, Director of Studies, Programme Director and Examinations Officer) and which contribute to the general life and work of the University.

N.B. The above list is not exhaustive.