Research and Innovation Engineer
Information for Candidates

Sainsbury Wellcome Centre for Neural Circuits and Behaviour at UCL

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UCL
Job Description

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**Vacancy Reference:** 1638203  
**Job Title:** Research and Innovation Engineer  
**Department:** Sainsbury Wellcome Centre  
**Salary:** £42,304 - £49,904 per annum inclusive of London Allowance  
**Grade:** 8  
**Hours:** 36.5 per week (full-time, 1.00 FTE)  
**Reports to:** Research and Innovation Fabrications Lab Manager  
**Available until:** Funded until 31 July 2019 in the first instance

### About the Sainsbury Wellcome Centre

The Sainsbury Wellcome Centre (SWC) commenced research operations in Spring 2016 bringing together world-leading scientists to investigate how brain circuits process information to generate perception, form memories and guide behaviour. Developed through the vision and partnership of the Gatsby Charitable Foundation and Wellcome, and with substantial investment from these partners, the mission of the SWC is to generate and test experimentally tractable theories of brain function.

The Centre will comprise around 14 highly interdisciplinary experimental research groups accommodated in a new, purpose-designed building, offering an outstanding and unparalleled research environment through its provision of state-of-the-art research laboratories, cutting-edge scientific equipment, and technologically-advanced prototyping and fabrication laboratories. SWC scientists use a broad spectrum of the latest advances in molecular and cellular biology, imaging, electrophysiology and behavioural techniques and enjoy an unparalleled research environment offering state-of-the-art research laboratories, cutting-edge scientific equipment, technologically-advanced prototyping and fabrication laboratories and custom in-house high-performance computing facilities.

Further details about the Sainsbury Wellcome Centre can be found at [www.ucl.ac.uk/swc](http://www.ucl.ac.uk/swc).

Further details about UCL can be found at [www.ucl.ac.uk](http://www.ucl.ac.uk).

### Professional Services at the Sainsbury Wellcome Centre

The Sainsbury Wellcome Centre has a specialist and experienced professional services team led by the Centre Manager. It is structured to efficiently support research activity and deliver effective management and operational leadership of the SWC.

The SWC prides itself on offering a high quality administrative support function, and fully supports the personal professional development and progression of its staff, actively encouraging colleagues to learn new skills and broaden their experience. The SWC is supported in this aim by UCL’s Organisational Development team ([http://www.ucl.ac.uk/hr/od/](http://www.ucl.ac.uk/hr/od/)), who run a wide range of training programmes for all staff types and grades.

The SWC offers staff an award-winning work environment in the heart of Bloomsbury with an on-site brasserie, access to lockers and changing facilities, secure bicycle storage, and access to pleasant outdoor space. The Centre also offers the full range of UCL staff benefits, including a generous annual leave entitlement, two occupational pension schemes, excellent family-friendly policies such as occupational shared parental pay,
a work-life balance policy, and a range of financial benefits such as a season ticket loan scheme and staff discounts. Further information can be found online: http://www.ucl.ac.uk/hr/benefits/employee_benefits.php.

About the SWC Fabrication Laboratories

The SWC FabLabs support and accelerate innovative scientific research through the design, development and deployment of new research instruments. The FabLabs provide multi-disciplinary engineering expertise, enabling assessment of scientific and technical requirements, proposal and development of engineered solutions. A high level of investment in the FabLab facilities has equipped them with state-of-the-art design and manufacturing technologies for the rapid prototyping of electronic, 3D printed, fluidic and precision machined parts.

The FabLabs teams, headed by highly skilled and experienced design and fabrication engineers, additionally facilitate a highly-functional and multidisciplinary 24/7 MakerSpace enabling scientists at all career levels to freely and creatively experiment and prototype ideas. More information including a list of equipment within the FabLabs can be found online here: http://www.ucl.ac.uk/swc/resources/fablabs

The Role of the Research and Innovation Engineer

The Research and Innovation Engineer performs highly skilled precision work in design, development, construction, assembly, and validation of a wide variety of scientific instruments and experimental equipment. They will assist scientists and other engineers with project specification, and translate concepts and ideas into prototypes and formally-designed laboratory equipment. The role holder must be able to produce fast-turnaround solutions to evaluate and test concepts in a spiral development environment, and be able to work independently as well as integrate within a fast-moving team working with modern tools and innovative development processes. The nature of the role requires considerable practical capability, mechanical ingenuity, multi-disciplinary inventiveness and the ability to innovate.

This post is funded until 31 July 2019 in the first instance.

Main Duties and Responsibilities

- Participates in the complete development lifecycle of experimental scientific equipment, from concept and design through to implementation, validation and deployment in the laboratory.

- Participates in discussion with scientists, fellow engineers and other collaborators of complex and diverse assignments.

- Applying a highly inventive mind-set to propose new ideas and concepts to solve often varying scientific technical requirements.

- Applying an innovative skill-set to implement new ideas (both own and from others) creating a tangible impact towards novel scientific research.

- Assists with project planning, provides cost and time estimates.

- Application of hardware design tools for schematic capture, simulation and printed circuit layout. (Altium Pro).

- Development of real-time embedded microcontroller hardware applications (ARM), single board computers (Raspberry Pi and derivatives) and FPGA based systems.
• Integrating microcontrollers and PCs to real-world sensors, actuators, analogue signal conditioning and power electronics.

• Application of modern software development techniques for real-time embedded software systems (C/C++) and PCs (C++, Python, other scientific languages). In consultation with scientists design of interface libraries, APIs.

• Development of mechatronic devices that may incorporate sensors, actuators, fluidics, pneumatics and optics.

• The manufacture of low-volume electronic assemblies using state-of-the-art prototyping equipment.

• Use of 3D modelling software (Inventor Pro) to design and simulate mechatronic parts and assemblies.

• Collaborating with other engineers for the manufacture of precision CNC machined components.

• Using state-of-the-art rapid prototyping equipment including laser cutters and 3D printers for the manufacture of final components and fast-track ‘proof of concept’ devices.

• Use of hand and power tools to fabricate conceptual devices and prototypes.

• Construction and test of multi-disciplinary systems.

• Training scientists in the methods and safe-use of a separate MakerSpace facility integral to the centre.

• Maintaining equipment, procuring stock and ensuring work environment is safe.

• Continuous development of knowledge, skills and new processes to meet evolving scientific needs.

The above description is not exhaustive and the post-holder will be required to undertake any other duties as may reasonably be requested within the scope, spirit and purpose of the post. Job descriptions are reviewed on a regular basis including at the annual appraisal. As duties and responsibilities change, the job description may be amended in consultation with the post-holder.

The post-holder will be expected to actively follow all UCL policies and procedures including Equal Opportunities, maintain an awareness of Fire and Health & Safety Regulations, attend management meetings and undertake such training and development as may be required for the post.

All staff are required to act professionally, co-operatively and flexibly in line with the requirements of the post.
Selection Criteria

The selection criteria outline the skills, knowledge and experience you need to have in order to perform this role. Applicants will be selected based on how well they demonstrate that they meet the essential, and if appropriate, desirable criteria for this particular role.

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<tr>
<th>Qualifications</th>
<th>Essential</th>
<th>Desirable</th>
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<tr>
<td>Undergraduate or Masters degree in Electronics Engineering, or equivalent professional experience.</td>
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<tr>
<th>Attributes</th>
<th>Essential</th>
<th>Desirable</th>
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<tr>
<td>Innovative, with demonstrable evidence of positive outcomes from the implementation of your ideas.</td>
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<td>Inventive, with evidence of providing novel and creative solutions to problems.</td>
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<td>A proactive communicator, with the ability to present and discuss complex, multi-disciplinary projects and assignments.</td>
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<td>Well organised, with the ability to work well independently and as part of a team.</td>
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<td>A commitment to your ongoing professional development, with the ability to continuously develop knowledge, skills and processes to stay cutting edge and adapt to evolving technology.</td>
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<th>Knowledge, experience and skills</th>
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<tr>
<td>Design and development of a broad range of electronic devices and systems.</td>
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<td>Expert use Electronic CAD for schematic capture, simulation and printed circuit layout (Altium Pro or similar).</td>
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<td>Microcontroller and single board computer (RPI and derivatives) based system development.</td>
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<td>Extensive experience with sensors and actuators.</td>
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<td>Analogue small signal design and power electronics design.</td>
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<td>Microcontroller firmware development in C++.</td>
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<td>PC software in C++, Python and scientific language, BLE, IoT, UI design.</td>
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<td>Electronic circuit prototyping and manufacture.</td>
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<td>Excellent knowledge of electronic engineering with the ability to convey expert advice.</td>
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<td>Use of hand tools for fabrication of prototypes.</td>
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<td>Multi-disciplinary systems construction/integration, both sub-miniature mechanisms and large systems.</td>
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<td>Adept in producing project documentation (CAD files, diagrams, API documentation) for use, reproduction, maintenance and open sharing.</td>
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<td>Electronics development in medical or physiological applications.</td>
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<td>FPGA application development.</td>
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<td>Fluidics and pneumatics knowledge.</td>
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<td>Experienced with 3D CAD (Inventor Pro or similar).</td>
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<td>3D printing experience (FDM and Polyjet technologies).</td>
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<td>Laser cutting / engraving experience.</td>
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<td>Experience of assisting with project planning, costing and time.</td>
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### Other Requirements

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<th>Requirement</th>
<th>Status</th>
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<td>An understanding and appreciation of the mission and research environment of the SWC, and a commitment to the establishment of the SWC as a world-leading research centre.</td>
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<td>Able and willing to work flexibly to meet the needs of the Centre.</td>
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Contact Us

If you have any queries relating to the vacancy or how to apply please contact the SWC HT team, swc.hr@ucl.ac.uk, +44 (0)20 3108 8011.

Applying for the Role

To begin the online application process, please access the advertisement by searching for it on the UCL vacancy search page (http://www.ucl.ac.uk/hr/jobs/) using the vacancy reference number, and click on the “Apply Now” button at the bottom of the vacancy advertisement.

Please complete the online application form, and use the supporting statement section to outline how you meet the selection criteria. Applications will be shortlisted based on the strength of the examples used to demonstrate that the applicant meets the selection criteria.
Pre-employment Checks
Confirmation of appointment will be subject to receipt of satisfactory references, verification of proof of right to work in the UK and to satisfactory pre-employment health and security screening. The Centre will provide overseas candidates who may require sponsorship with support in seeking an appropriate visa.

Salary
Starting salary will be on the Grade 8 scale according to relevant skills, knowledge, experience and achievement. Cost of living pay awards are negotiated nationally and are normally effective from 1 August each year.

Pension
Post-holders will be eligible to join the Universities Superannuation Scheme (USS), subject to the Scheme's rules and eligibility conditions.

Conditions of Service
Conditions of Service for Research and Professional Services Staff can be found at: http://www.ucl.ac.uk/hr/salary_scales/Support_Research_tcs.php.

Probation
Appointments are subject to a probationary period of 9 months.

Hours of Work and Overtime
Appointments will be full time. UCL’s weekly hours of work for a full-time post are an annual average of 36.5 hours.

Annual Leave
Staff are entitled to 27 days annual leave per year (pro rata for part-time staff). In addition, staff are entitled to 8 days public and statutory holidays, and 6 UCL closure days with pay per year.

Location
The Sainsbury Wellcome Centre is located in the heart of London around five minutes’ walk from the main UCL campus. The mainline railway stations at Euston, King’s Cross, St Pancras, Marylebone and Paddington are within easy reach as are the London Underground stations located at Warren Street and Goodge Street.

Equal Opportunities
UCL’s equal opportunity policy is that in the recruitment, selection, education and assessment of students, and in the recruitment, selection, training, appraisal, development and promotion of staff, the only consideration must be that the individual meets, or is likely to meet the requirements of the programme or course or post. The requirements being met, no student or employee will be discriminated against on the basis of their sex, sexual orientation, race, colour, ethnic origin, nationality, disability, marital or civil partnership status, gender reassignment, pregnancy and maternity, caring or parental responsibilities, age, or beliefs on matters such as religion and politics.

UCL is committed to providing a learning, working and social environment in which the rights and dignity of all its members are respected, and which is free from discrimination, prejudice, intimidation and all forms of harassment including bullying. This Policy means that all students and employees of UCL have the right to study or work in an environment free from discrimination, prejudice and all forms of harassment or bullying. UCL is committed to a programme of action to ensure that this and other equalities policies are implemented and monitored at an organisational and individual level.