Research and Innovation Engineer (Mechatronics)
Information for Candidates

Sainsbury Wellcome Centre for Neural Circuits and Behaviour at UCL
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Vacancy Reference: 1866688

Job Title: Research and Innovation Engineer (Mechatronics)

Department: Sainsbury Wellcome Centre

Salary: £44,674 - £52,701 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 2021 in the first instance

About the Sainsbury Wellcome Centre

The Sainsbury Wellcome Centre (SWC) brings 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 experimentally testable 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. SWC scientists use a broad spectrum of the latest advances in molecular and cellular biology, imaging, electrophysiology and behavioural techniques and enjoy state-of-the-art research laboratories, cutting-edge scientific equipment, technologically-advanced prototyping and fabrication laboratories and custom in-house high-performance computing facilities. The full complement of scientists in the Centre is expected to reach around 150 together with circa 50 dedicated support staff.

Further details about the Sainsbury Wellcome Centre can be found at www.sainsburywellcome.org.

The Sainsbury Wellcome Centre is part of the UCL School of Life and Medical Sciences (SLMS). SLMS brings together four UCL Faculties to create one of the largest and most prestigious aggregations of academics in biomedical, life and population health sciences worldwide; there are nine Nobel Prize winners associated with Life Sciences at UCL. The School has a global reputation for teaching, informed by cutting-edge research. A full profile of the School can be found at: http://www.ucl.ac.uk/slms/about-us. The School is structured into four Faculties: Brain Sciences; Life Sciences; Medical Sciences; and Population Health Sciences. SWC is most closely linked with the Faculties of Brain Science and Life Sciences.

Further details about UCL can be found at 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.

SWC prides itself on offering a high quality administrative, technical and operational support function, and fully supports the 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 (https://www.ucl.ac.uk/human-resources/learning-and-development), who run a wide range of training programmes for all staff types and grades.

Work Environment

SWC offers staff an award-winning work environment in the heart of Fitzrovia with an on-site brasserie, access to lockers and changing facilities, secure bicycle storage, and access to pleasant outdoor spaces. The Centre also offers the full range of UCL staff benefits, including a generous annual leave entitlement, 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: https://www.ucl.ac.uk/human-resources/pay-and-staff-benefits.

The Role of the Research and Innovation Engineer

The SWC FabLab supports and accelerates innovative scientific research through the design, development and deployment of new research instruments. The FabLab provides 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 provides state-of-the-art design and manufacturing technologies for electronic, 3D printed, laser cut and precision machined parts. The FabLab additionally facilitates a highly-functional and multidisciplinary 24/7 MakerSpace facility enabling scientists at all career levels to freely and creatively experiment and prototype ideas.

This post is funded until 31 July 2021 in the first instance; the Centre is externally funded with funding awarded in five-year tranches subject to periodic funder review. Subject to successful grant renewal, it is anticipated that staff posts will be extended in line with successive funding periods.

Main Duties and Responsibilities

Core Duties

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

• Participates in discussion with scientists, fellow engineers and other collaborators on complex and diverse projects.

• Applying a highly innovative mind-set to propose new ideas and concepts delivering a tangible impact towards novel scientific research.

• Applying creative, diverse and new design and manufacturing techniques to solve often varying scientific technical requirements.
Applying theoretical and practical knowledge in design of precision mechatronic and mechanical devices, with particular consideration given to the end-application with respect to required scale of engineering, influencing mass, inertia and durability. Furthermore, to advise researchers and engineering colleagues in best design practice, enabling efficient, reliable and repeatable methods to be realised.

Application of professional knowledge to predict component and system failure modes and their effect, and further application of knowledge to implement controls for risk reduction.

Use of 3D CAD tools for design, modelling, analysis and simulation of mechatronic parts and assemblies (Fusion 360, Inventor Pro and ANSYS).

Familiarity of electronic CAD tools for schematic capture and printed circuit layout.

Design of mechanical components for precision CNC manufacture, example components may include precision system assemblies, sensor mechanical interface, actuator design and interface, linkages, gear assemblies, bearings, fluidic and optical components.

Design for additive manufacturing and laser cutting.

Manufacture of 3D printed and laser cut components for rapid prototyping of ‘proof of concept’ components.

Familiarity of microcontroller firmware and interface of transducers, providing the necessary knowledge and skills for comprehensive mechatronic R&D.

Open to manufacture of low-volume electronic assemblies using state-of-the-art prototyping equipment.

Precision assembly and validation 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 a safe work environment.

Writing SOP’s and risk assessments ensuring safe and consistent operation of equipment.

Assist with project planning, provide cost and time estimates.

Assist in maintaining the FabLab vision, with consistent application of defined operational and a process of continuous improvement.

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 required 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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<thead>
<tr>
<th>Qualifications</th>
<th>Essential</th>
<th>Desirable</th>
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<tbody>
<tr>
<td>Degree level or master’s in Mechatronic or Mechanical Engineering, or equivalent professional experience with proven theoretical background.</td>
<td>X</td>
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<tr>
<th>Knowledge and experience</th>
<th>Essential</th>
<th>Desirable</th>
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<tr>
<td>Strong knowledge of mechanical engineering fundamentals and design for manufacture.</td>
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<tr>
<td>Experienced in the design, development and manufacture of precision devices (such as medical devices, consumer electronics, optical or electro-mechanical systems, special purpose equipment).</td>
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<td>Experienced in interpretation of customer requirements for mechatronic systems, translation into user stories and technical specification, R&amp;D implemented with an agile methodology, culminating in a customer’s deliverable.</td>
<td>X</td>
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<tr>
<td>Experienced application of 3D CAD (Inventor Pro and Fusion 360 or similar) for production of solid models, system assemblies, detailed 2D manufacturing and assembly drawings.</td>
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<td>Extensive experience with sensors and actuators.</td>
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<td>Familiarity with CNC manufacturing technologies.</td>
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<td>Experience of Failure Mode and Effects Analysis (FMEA) and Design for Manufacturing and Assembly (DFMA)</td>
<td>X</td>
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<td>Experience of Computer Aided Engineering (CAE) software for analysis of mechatronic systems (FEA etc).</td>
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<td>Familiarity with prototype PCB manufacture technologies.</td>
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<td>Microcontroller based system development.</td>
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<td>Microcontroller firmware development (C/C++, MicroPython)</td>
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<th>Skills</th>
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<th>Desirable</th>
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<tr>
<td>Able to identify and solve a broad range of problems using an analytical approach, with demonstratable evidence of applying this methodology to identify interactions between hardware, software and mechanics.</td>
<td>X</td>
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<td>Able to work in an agile engineering / science team and on own initiative, self-motivated and willing to learn.</td>
<td>X</td>
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<td>Innovative and inventive, with demonstrable evidence of creative solutions to problems and positive outcomes from the implementation of your ideas.</td>
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<td>A commitment to and evidence of your ongoing professional development, with the ability to continuously develop knowledge, skills and processes to stay cutting edge and adapt to evolving technology.</td>
<td>X</td>
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<td>Adept in producing project documentation (CAD files, diagrams, API documentation) for use, reproduction, maintenance and open source.</td>
<td>X</td>
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<td>Ability to manipulate code for microcontroller based electronic controllers to support design and validation efforts.</td>
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<td>Use of Electronic CAD for schematic capture, simulation and printed circuit layout (Mentor Graphics Xpedition or similar).</td>
<td>X</td>
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<td>Electronic circuit prototyping and manufacture.</td>
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<td>Fluidics and pneumatics knowledge.</td>
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<td><strong>Other Requirements</strong></td>
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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>
<td>X</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 HR 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.

Please note that there is a limit of 2,500 words to explain how you meet the essential criteria, and a limit of 2,500 words to explain how you meet the desirable criteria.

All candidates will be notified of the outcome of their application.
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. Staff incrementally progress along the salary scale; the effective date of incremental progression is 01 August each year. You must have completed the period of service stipulated in your contract of employment (typically your probationary period) to be eligible to increment. Incremental progression does not include the discretionary contribution points on the salary scale. 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, Teaching and Professional Services Staff can be found at: https://www.ucl.ac.uk/human-resources/conditions-service-research-teaching-and-professional-services-staff.

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

Hours of Work and Overtime
UCL’s full time working week is 36.5 hours per week. SWC is willing to consider flexible-working arrangements, subject to discussion and agreement with your line manager.

Pre-agreed overtime will be offered as equivalent time off in lieu.

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 around 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
SWC is committed to the promotion of equality, diversity and inclusion for its staff, students and visitors and is fully supportive of UCL’s policy; the full equality policy statement is available online: https://www.ucl.ac.uk/human-resources/sites/human-resources/files/equal_opportunity_policy_statement.pdf.

SWC is currently working towards an Athena SWAN award.