UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Assistant in Computational Modelling of Hip Replacement, Faculty of Engineering and Physical Sciences

Salary: Grade 6 (£33,951 – £39,906 p.a.)

Reporting to: Professor Ruth Wilcox

Closing date: Tuesday 01 September 2026

Reference: EPSME1217

Fixed term (up to 30 June 2027 - to complete specific time limited work)

Location: Leeds main campus (with scope for hybrid working)

We are open to discussing flexible working arrangements

Research Assistant in Computational Modelling of Hip Replacement,
Institute of Medical and Biological Engineering,
School of Mechanical Engineering.

Are you an enthusiastic researcher with expertise in biomedical engineering related to orthopaedic applications? Do you have a strong technical background including experience of using image analysis and finite element methods? Would you like to work as part of a multidisciplinary institute to address a clinically driven challenge?

Overview of the Role

We are looking for a proactive individual to join our team of researchers at the institute of Medical and Biological Engineering, to support our vision to improve the quality of life of an ageing population. This role will support projects funded by the Engineering and Physical Sciences research Council (EPSRC) and industry related to hip replacement surgery.

Over 10% of adults over 45 years of age are living with hip osteoarthritis, and there are nearly 100,000 total hip replacement (THR) surgeries performed in the UK each year. While the procedure is very successful, it is not suitable for all patients and some experience complications such as implant dislocation or loosening that require further 'revision' surgery. A range of THR designs have been developed to reduce the risks of complications in different patient cohorts, however, there remain challenges in determining the optimum device choice and implant positioning for each patient.

This role will involve using computational finite element analysis and image processing to examine how different patient variables would affect outcomes of THR. It will bring together evidence from ongoing clinical and experimental studies, including patient image data and kinematic measurements, alongside data from experimental simulator studies and retrieval analyses.

You will have a strong background in image analysis and finite element modelling and have a proactive approach to working in an experimental and computational environment. You will join an institute that includes different expertise and substantial experience in supporting early-stage researchers in a key phase of their career. We


encourage an environment of collaboration, trust and wellbeing, which embraces diversity.

Main duties and responsibilities

- Performing computational modelling of the hip and hip replacement devices using finite element software (Abaqus), including writing scripts in Python/Matlab to extract and process the data;
- Performing analysis of x-rays or 3D medical images using custom written code to derive specific measurements;
- Extracting data from the image analysis and modelling work, alongside corresponding experimental data from other studies, and performing comparative analyses;
- Liaising with the wider research group including clinical and industry colleagues, participating in discussions and presenting research outputs to the group;
- Supporting research activities, including contributing to research results and outputs and to the generation of original ideas, ensuring a successful programme of investigation;
- Writing reports, undertaking literature reviews and preparing papers for publication, with guidance as necessary;
- Collating and analysing data to inform the direction and progression of the research project;
- Participating in the research group and presenting research output where appropriate;
- Working both independently and as part of a larger team of researchers and stakeholders;
- Contributing to the research culture of the School, where appropriate;
- Continually updating your knowledge, understanding and skills in the research field.

These duties provide a framework for the role and should not be regarded as a definitive list. Other reasonable duties may be required consistent with the grade of the post.

Qualifications and skills

Essential

- An undergraduate or master's degree in mechanical or medical engineering or a closely aligned field;
- A strong background in using finite element analysis for orthopaedic applications, ideally including both implicit and explicit solver methods;
- Experience of using Python or Matlab, ideally both;
- Good interpersonal and communication skills, both written and verbal and the ability to communicate effectively with a wide range of stakeholders;
- Well-developed analytical skills;
- Good time management and planning skills, with the ability to meet tight deadlines;
- A proven ability to work well both independently and in a team;
- The ability to work accurately, unsupervised and use your own initiative.

Desirable

- A PhD (or close to completion) in medical engineering or a closely allied discipline;
- Experience of contributing to the writing of papers for publication;
- Experience of hip anatomy and hip replacement biomechanics;
- Experience of image analysis methods and their application in the evaluation of clinical image data;
- Experience of using and adapting previously developed models or code for advanced applications.

How to apply

You can apply for this role online; more guidance can be found on our How to Apply information page. Applications should be submitted by **23:59** (UK time) on the advertised closing date.

Contact information

To explore the post further or for any queries you may have, please contact:

Professor Ruth Wilcox, Professor of Biomedical Engineering
Email: R.K.Wilcox@leeds.ac.uk

Additional information

Faculty and School Information
Further information is available on the research and teaching activities of the Faculty of Engineering & Physical Sciences, and the School of Mechanical Engineering and the Institute of Medical & Biological Engineering.

Working at Leeds
We are a campus-based community and regular interaction with campus is an expectation of all roles in line with academic and service needs and the requirements of the role. We are also open to discussing flexible working arrangements. To find out more about the benefits of working at the University and what it is like to live and work in the Leeds area visit our Working at Leeds information page.

A diverse workforce
As an international research-intensive university, we welcome students and staff from all walks of life and from across the world. We foster an inclusive environment where all can flourish and prosper, and we are proud of our strong commitment to student education. Within the Faculty of Engineering and Physical Sciences we are dedicated to diversifying our community and we welcome the unique contributions that individuals can bring, and particularly encourage applications from, but not limited to Black, Asian and ethnically diverse people; people who identify as LGBT+; and people with disabilities. Candidates will always be selected based on merit and ability.

The Faculty of Engineering and Physical Sciences are proud to have been awarded the Athena Swan Silver Award from AdvanceHE. The Athena Swan Charter is a framework which is used across the globe to support and transform gender equality within higher education and research. Our equality and inclusion webpage provides more information.

Information for disabled candidates
Information for disabled candidates, impairments or health conditions, including requesting alternative formats, can be found under the 'Accessibility' heading on our How to Apply information page or by getting in touch by emailing HR via hr@leeds.ac.uk.

Criminal Record Information
Rehabilitation of Offenders Act 1974
A criminal record check is not required for this position. However, all applicants will be required to declare if they have any 'unspent' criminal offences, including those pending.

Any offer of appointment will be in accordance with our Criminal Records policy. You can find out more about required checks and declarations in our Criminal Records information page.

Salary Requirements of the Skilled Worker Visa Route

Please note that due to Home Office visa requirements, this role may only be suitable for first-time Skilled Worker visa applicants if they are eligible for salary concessions. For more information, please visit the Government's Skilled Worker visa page.

For research and academic posts, we will consider eligibility under the Global Talent visa. For more information, please visit the Government's page, Apply for the Global Talent visa.