



UNIVERSITY OF
CAMBRIDGE

Stephen Hawking Centre Research Software Engineering Project Manager

Faculty of Mathematics

Closing Date: 27 January 2025

Job Reference: LE43270



Research Software Engineering Project Manager

Salary:

£41,421 - £55,295

Contract:

Two years fixed term, in the first instance

Location:

Centre for Mathematical Sciences

Department:

Faculty of Mathematics

Responsible to:

Professor Paul Shellard

Working Pattern:

Full Time

The University of Cambridge has a Hybrid Working Policy that aims to enable as many staff as possible to work in a hybrid way if they so wish, whilst recognising that some roles will include tasks that can only be performed on University premises.

Purpose of the role

The role holder is expected to provide oversight and coordination of RSE efforts within the Stephen Hawking Centre and other contributing Faculty of Mathematics research groups. In addition, they will assist with design and support of the Faculty of Mathematics Computing Development Platform, an HPC and data analytics supercomputer facility, as well as training on this platform in association with the Centre for Doctoral Training in Data Intensive Science.

The role holder will be responsible for providing second-tier support to research staff using the Computing Development Platform, for which there is also a Faculty System Administrator. They will also be expected to take technical responsibility for HPC, AI/ML and software development training. This encompasses design, tier-two support and service improvement by identification and addressing of systemic issues of services failure. The role holder will take responsibility for the development and ongoing operation of services for HPC application development, delivery and training.

The role will provide senior-level expertise to oversee the employment and coordination of Research Software Engineers based in the Stephen Hawking Centre and other contributing research groups.

The role facilitates RSE teamwork in the areas of testing, profiling and improving the performance of parallel code in preparation for production runs on external HPC facilities, using in-depth optimisation and tuning of code submitted by users and improvement of parallel scaling characteristics. The role advises participating Faculty members on grant applications for RSE support and hardware procurement and supports them by offering RSE-based assistance.

Key responsibilities**Management of departmental HPC development and post-processing platforms**

The role holder would support the overall system administrator for the Faculty of Mathematics Research Programming Development Platform, helping to ensure smooth operation and appropriate cover given available resources and support. The role holder would support the evaluation of research group hardware needs, identifying economies of scale for cost-effective purchases, advise on system management and resource allocation to ensure that contributors receive their share of resources. The role holder will also assist with planning and execution of long-term enhancements to, and developments of, the Faculty of Mathematics HPC system.



Key responsibilities, continued

Planning and support for graduate student training

The role holder would coordinate with those responsible for graduate student training in research programming to ensure that course schedules reflect current topics of direct relevance to computing in the mathematical sciences. This is particularly relevant to Research Computing and HPC courses offered to CDT and other PhD students through the MPhil in Data Intensive Science. This will involve identifying new and emerging hardware, software and communication technologies, products, services, methods and techniques and assessing their relevance and potential value in areas such as cost, performance or sustainability. The role will also be called on to promote awareness of these emerging technologies among staff.

Support for Research Software Engineers in Mathematics Faculty research groups

This role provides senior-level expertise to oversee the employment and coordination of research software engineers, enabled through the pooling of research grant and departmental funding. Department-wide RSE support would be offered through access to training and a weekly Research Programming Clinic for members of the Faculty. The role holder would facilitate RSE teamwork by testing, profiling and improving the performance of parallel code in preparation for production runs on external HPC facilities; by in-depth optimisation and tuning of code submitted by users and improvement of parallel scaling characteristics. The role holder would offer advice to faculty members on grant applications for RSE support and hardware procurement. The role holder would also advise on opportunities to apply for HPC resources and RSE support on central University and national HPC facilities, and assist by representing and communicating departmental needs in high performance computing and data analytics within the University and externally.

Project management of flagship research projects in high performance data analytics, overseen by the CTC/GR group

The role holder would oversee long-term strategic development of flagship code projects overseen by the Relativity and Gravitation group and the Centre for Theoretical Cosmology [CTC] currently organized within the COSMOS Intel Parallel Computing Centre [IPCC] (recently renamed the Intel oneAPI Center of Excellence), and/or additional CMS research projects (as agreed given appropriate funding contributions). This aspect of the role is currently funded by STFC grants and other sources, and also by the CTC. A key purpose would be to create an environment conducive to industrial engagement and impact, at present involving fortnightly communication with software engineering teams from the industrial partners (currently Intel Corporation). The project would entail management and oversight of Research Software Engineering/Computer Officer effort within the COSMOS IPCC in the following areas:

- Overseeing and managing systems linked to the COSMOS IPCC, including experimental platforms
- Co-designing high performance computing and data analytic hardware and software system platforms
- Testing and developing more efficient parallel algorithms for modern many-core architectures with nested parallelism and complex memory hierarchies
- Incorporating new memory capabilities through developing in-memory programming paradigms, such as in-situ visualization
- Reporting on research developments in journals, white papers and conference proceedings
- Designing, coding, testing, correcting and documenting large and/or complex scientific codes and their modifications from supplied specifications using agreed standards and tools, to achieve a well-engineered result (including availability for public release)
- Providing direct, specialised, code development support. Porting code to parallel architectures
- Translating scientific requirements into algorithms and applications
- Testing, profiling and improving the performance of code in preparation for production runs on available architectures. In depth optimisation and tuning of code submitted.

Person Specification

Criteria	Essential	Desirable
Qualifications		
Degree level qualification/Level 7 vocational qualification	✓	
Experience		
Demonstrable experience of IT and management of HPC systems	✓	
Managing technical activities and associated teams, with evidence of managing for quality results	✓	
Evidence of working at a tactical or operational level to deliver a technology change	✓	
Evidence of developing and applying an understanding of a new technology to deliver business results		
Evidence of effectively sharing technical knowledge and skill to support the outputs and learning of colleagues and users	✓	
Experience of running an IT operational team/project team of a similar role		✓
Skills		
Expert knowledge of one or more IT domains: <ul style="list-style-type: none"> e.g. in IT Infrastructure: expertise in networks or desktop or servers e.g. in Application Design: expertise in application development, or analysis and design (functional and technical) 	✓	
Expertise in High performance computing and research software engineering	✓	
Ability to develop and maintain their own knowledge in their field	✓	
Strong planning skills	✓	
Strong ability to build relationships at all levels of the organisation	✓	
Able to communicate effectively orally and in writing	✓	
Highly proactive, persuasive and enthusiastic	✓	

The Faculty of Mathematics

The Faculty of Mathematics, part of the School of Physical Sciences and has two departments, [Applied Mathematics and Theoretical Physics \(DAMTP\)](#) and [Pure Mathematics and Mathematical Statistics \(DPMMS\)](#). DPMMS has a sub-department of statistics called the [Statistical Laboratory](#).

The Departments (including the Statistical Laboratory which is a sub-department of DPMMS) are accommodated, along with the Isaac Newton Institute for Mathematical Sciences and the Betty and Gordon Moore Library (covering mathematics, physical sciences and technology) at the Centre for Mathematical Sciences, a beautiful development west of the city centre and close to other Science Departments. The accommodation is of the highest quality and was designed by mathematicians and architects to facilitate the study of mathematics.

The Faculty of Mathematics is now one of the largest in the world, with over 1000 students on undergraduate and master's courses, 350 postgraduate students, 150 postdoctoral researchers and more than 120 staff. It continues as a global leader in mathematical research and its applications to numerous areas, including health, life sciences, the environment, (quantum) information, data science, fluid dynamics, theoretical physics (including cosmology, astrophysics and geophysics), and statistics.

Research

Current research in DAMTP is loosely organised into eight broad subject areas: Applied and Computational Analysis, Astrophysics, Geophysics, Fluid and Solid Mechanics, Mathematical Biology, Quantum Information, High Energy Physics and General Relativity and Cosmology. The boundaries between the areas are not rigid and evolve with time. Many members of staff contribute to more than one area and this is regarded as a key factor in the continuing success of DAMTP. For more information please see: <https://www.damtp.cam.ac.uk/research>.

In DPMMS, there are no formally organised research groups as such. The pages for individual members of DPMMS give information about each person's research interests (see: <https://www.dpmms.cam.ac.uk/research/>). The research environment in DPMMS is very lively. Many regular seminar series meet weekly during term, and there is a steady stream of short and long-term visitors from around the world.

Further general information about the University of Cambridge, the Departments and Mathematics in Cambridge may be found on the websites:

<https://www.maths.cam.ac.uk>

<https://www.damtp.cam.ac.uk>

<https://www.dpmms.cam.ac.uk>



The School of Physical Sciences

The School of the Physical Sciences is one of six Schools making up the academic work of the University. It covers Astronomy, Chemistry, Earth Science, Geography, Materials Science and Metallurgy, Mathematics and Physics.

The School's aim is to contribute to our understanding of the physical world through excellence in observational, theoretical and experimental science and to extend quantitative, qualitative and combined methodologies to address problems in the fields of biology, technology, medicine, social science and the humanities. In pursuit of these goals, the School coordinates objectives in research, teaching, and infrastructure.

About the School

The School of the Physical Sciences comprises the following Departments:

- [Applied Mathematics and Theoretical Physics \(DAMTP\)](#)
- [Chemistry](#)
- [Earth Sciences](#)
- [Geography \(including the Scott Polar Research Institute\)](#)
- [Institute of Astronomy](#)
- [Isaac Newton Institute of Mathematical Sciences](#)
- [Materials Science and Metallurgy](#)
- [Physics \(Cavendish Laboratory\)](#)
- [Pure Mathematics and Mathematical Statistics \(DPMMS\)](#)



The School is responsible for allocating core funds to departments and provides broad strategic focus across its constituent departments in a number of areas including; research activity, undergraduate and graduate education, estate needs, fundraising and human resources. As part of the University's annual planning cycle, the School prepares a financial and academic plan which sets out strategic objectives, determines budgets, as well as the flow of resources to departments. The School manages a wide range of administrative activities and projects across its departments and works alongside other Schools to further interdisciplinary research.

The School has over 1500 members of staff, over 3000 students and an annual budget of over £100 million.



Terms of Appointment

Tenure and probation

Appointments will be made on a fixed-term basis for 2 years due to limited funding. Appointment is subject to satisfactory completion of a nine-month probationary period.

Hours of Work and Working Pattern

The appointment is full-time, working Monday—Friday.

Pension

You will automatically be enrolled to become a member of USS (Universities Superannuation Scheme) – a hybrid pension scheme. For further information please visit: www.pensions.admin.cam.ac.uk/

Annual leave

Subject to compliance with the Statutes and Ordinances relating to leave, full-time officers are entitled in any holiday year to take annual paid leave of 41 days inclusive of public holidays. For part-time employees, annual leave will be pro rata'd based on days worked.

General information

Pre-employment checks

Right to work in the UK

We have a legal responsibility to ensure that you have the right to work in the UK before you can start working for us. If

you do not have the right to work in the UK already, any offer of employment we make to you will be conditional upon you gaining it.

Health declaration

Once an offer of employment has been made the successful candidate will be required to complete a work health declaration form.

Qualifications

The person specification for this position lists qualifications that are essential and/or desirable. Please note that if you are offered the post you will be asked to provide your relevant original certificates of these qualifications.

References

Offers of appointment will be subject to the receipt of satisfactory references.

Equality and Diversity

We particularly encourage women and/or candidates from a Black, Asian and Minority Ethnic background to apply for this vacancy as they are currently under-represented at this level within our University.

Information if you have a disability

The University welcomes applications from individuals with disabilities. We are committed to ensuring fair treatment throughout the recruitment process. We will make adjustments to enable

applicants to compete to the best of their ability wherever it is reasonable to do so and, if successful, to assist them during their employment. Information for disabled applicants is available at <https://www.admin.cam.ac.uk/offices/hr/staff/disabled/>

We encourage you to declare any disability that you may have, and any reasonable adjustments that you may require, in the section provided for this purpose in the application form. This will enable us to accommodate your needs throughout the process as required. However, applicants and employees may declare a disability at any time.

If you prefer to discuss any special arrangements connected with a disability, please contact, the Department Administrator who is responsible for recruitment to this position by email at

hr-office@maths.cam.ac.uk

The University

The University of Cambridge is consistently ranked one of the best universities in the world, achieving academic excellence through its Faculties, Departments and other Institutions, together with the 31 Colleges.

The University is renowned for its record of discovery and innovation. It is one of the great institutions, with a regional, national and global reach, attracting the very best and brightest minds. Our staff and students shape the world around us for the better: we attract and partner with like-minded people.

Whether contributing to the development of new anti-cancer drugs, adding to the understanding of how black holes are formed, revolutionising the study of ancient settlements, convening academic expertise to offer solutions to the climate crisis, or analysing public attitudes towards democracy around the world, the University's research is remarkable in its breadth, quality and impact. The University also sits at the heart of Europe's largest technology cluster and has catalysed more than 1,500 high-tech companies. And yet what inspires our 24,000 students and 13,000 staff is not what has already been achieved, but what is possible in the future.

The education and experience of our students, based on a partnership between the University's academic Departments and Faculties and the 31 Colleges, is second to none. Every student is a member of one of the Colleges, each a community of students, academics and staff drawn from across the University's comprehensive range of subject areas.



The University is a self-governing community, with a system for decision-making that provides a high degree of accountability and transparency to its members. Each Department and Faculty is part of one of six academic Schools, but each of them, and each individual academic, has a great deal of autonomy. The Colleges are independent and self-governing, working in a symbiotic relationship with the University.

The University has a number of Institutions that are independent of any Faculty or Department and are not part of the academic Schools. These include the Institute of Continuing Education (which provides high-quality education to adults throughout their lives), the Fitzwilliam Museum, Kettle's Yard (an historic house and gallery that holds important collections of modern art) and the University Library. In addition to their diverse contributions to University and public life, these non-School Institutions are also important centres of teaching and research.

Cambridge University Press & Assessment provides academic publishing, examinations and learning materials worldwide, supporting the dissemination of research, academic development at school and in higher education, and international student mobility. Legally, the Press & Assessment is a department of the University. It provides very important funds to invest in the academic purposes of the University.

The University has made truly remarkable contributions to the sum of human understanding, with breakthrough ideas and discoveries that have changed the way we understand ourselves, our planet, and the universe around us. Yet the global and national contexts in which it operates are fast-changing and increasingly filled with uncertainty. In a world that is becoming - politically, economically, socially, and technologically – ever more interconnected but even less equal, the University's mission – “to contribute to society through the pursuit of education, learning and research at the highest international levels of excellence” – has never been more relevant.



About Us

The University is one of the world's leading academic centres. It comprises 150 faculties and departments, together with a central administration and other institutions. Our institutions, museums and collections are a world-class resource for researchers, students and members of the public representing one of the country's highest concentrations of internationally important collections.

The University has an annual income of £2 billion. Research income, won competitively from the UK Research Councils, the European Union (EU), major charities and industry, exceeds £500 million per annum and continues to grow.

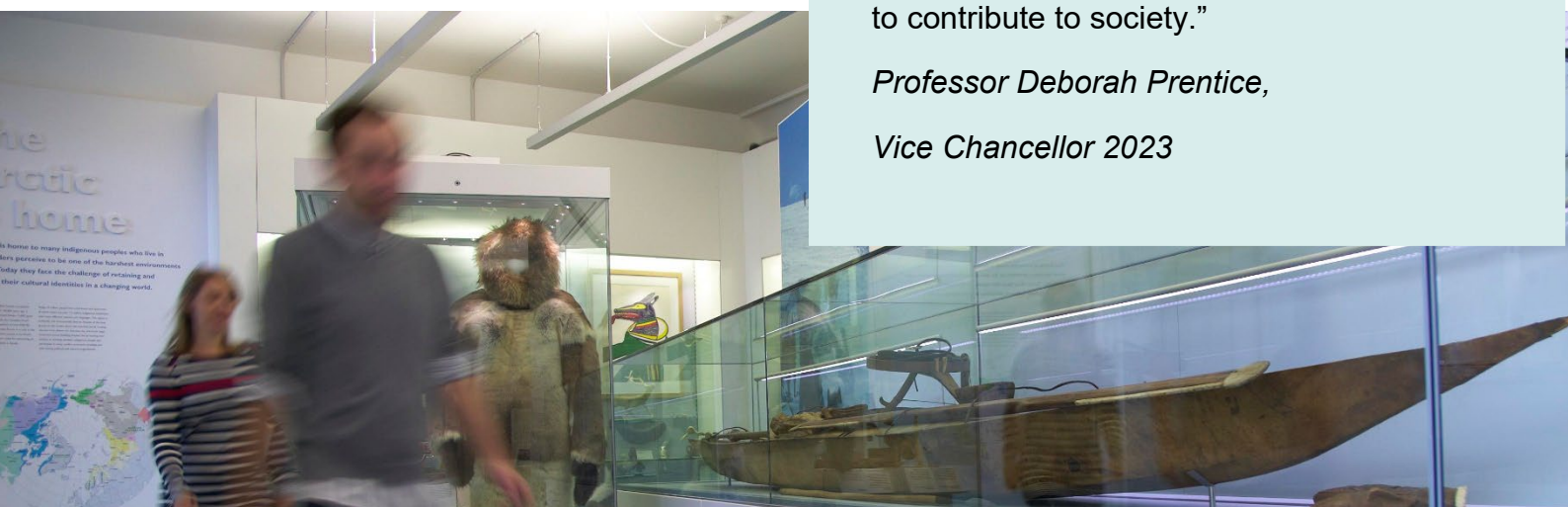
The Colleges and the University remain committed to admitting the best students regardless of their background and to investing considerable resources both in widening access and financial support. The 31 Colleges are self-governing, separate legal entities which appoint their own staff. Many academic staff are invited to join a College as a Teaching Fellow, which provides a further social and intellectual dimension. The Colleges admit undergraduate students, provide student accommodation and pastoral support and deliver small group teaching for undergraduates.

The University awards degrees and its faculties and departments provide lectures and seminars for students and determine the syllabi for teaching.

Our instinct for seeking out excellence and setting up enduring and mutually beneficial collaborations has led us to establish strategic partnerships across the globe. Whether it is the successful Cambridge-Africa Programme involving universities in Ghana, Uganda and elsewhere on the African continent; or the close association with the government of India to pursue new research in crop science; or the creation, with Germany's Max Planck Institutes, of a Cambridge-based centre for the study of ethics, human economy and social change – international partnerships are now an inextricable part of the University's make-up.

“Through its outstanding education, research and innovation, the University of Cambridge has made – and continues to make – a lasting contribution to human knowledge and is flourishing. By working at the University of Cambridge, you will be joining a vibrant community of students, scholars and professional services staff committed to supporting and enhancing the University's mission to contribute to society.”

*Professor Deborah Prentice,
Vice Chancellor 2023*



Working at the University

Working at Cambridge you will join a diverse, talented and innovative community, with more than 24,000 students and over 13,000 staff from all walks of life and corners of the world.

The University continually explores strategies to attract and retain the best people. It is committed to supporting its staff to achieve their best. We are a fair, diverse and inclusive society and we believe our staff are our greatest asset. There is strong commitment to developing institutional leadership and supporting and encouraging staff development at all levels.

The University offers a variety of roles including academic, research, professional, managerial and support roles. We also offer extensive benefits and excellent learning opportunities within a stimulating working environment.

Equality, Diversity and Inclusion

The University has built its excellence on the diversity of its staff and student community. We aim to be a leader in fostering equality and inclusion, and in promoting respect and a sense of belonging for all. We encourage applications from all sections of society. All appointments are made on the basis of merit. We have an Equal Opportunities Policy, along with a range of diversity groups, including the Women's Staff Network, Race Equality Network and LGBT+ Staff Network. More details are available here:

<http://www.equality.admin.cam.ac.uk/>

The University's estate is undergoing the most significant transformation in its history. Cambridge has been able to create a science and technology campus to the west of the city centre, and is expanding further to the north west of Cambridge including investing in affordable homes for University key workers and community facilities. Even with their continued development, the University remains within walking or cycling distance across the campus. The University is a major partner on the Cambridge Biomedical Campus and continues to redevelop its historic city centre sites demonstrating a clear determination to ensure that we can offer the best facilities and opportunities for our staff and students.



The University has a bronze Race Equality Charter award, with a framework for improving the representation, progression and success of minority ethnic staff and students within higher education. Furthermore, the University's silver Athena swan award recognises and celebrates good practice in recruiting, retaining and promoting gender equality.

Living in Cambridge

Cambridge is rich in cultural diversity. From beautiful University and College buildings, museums and art galleries, quaint gardens and punts on the River Cam, to a vibrant restaurant and café scene, our employees are surrounded by the wonderful features of this unique city.

You can find a wide-range of high street shops and 3 shopping centres, with independent alternatives at the historic market and nestled within the passageways in the city centre. You will find a cinema, bowling alley, a nightclub and various live performances at the Cambridge Leisure Park, with further entertainment options at the Corn Exchange, Arts Theatre and the ADC Theatre. Further information can be found on the Visit Cambridge website.

If you prefer the faster pace of life, London is a 45-minute train journey away. For those travelling from overseas, Stansted Airport is just 45 minutes away and Heathrow Airport under 2 hours away. The University is a short distance from a host of other attractions such as Ely Cathedral, Newmarket Races and various wildlife parks and stately homes. Cambridge is also within easy reach of the beautiful Broads and coastlines of Norfolk and Suffolk.

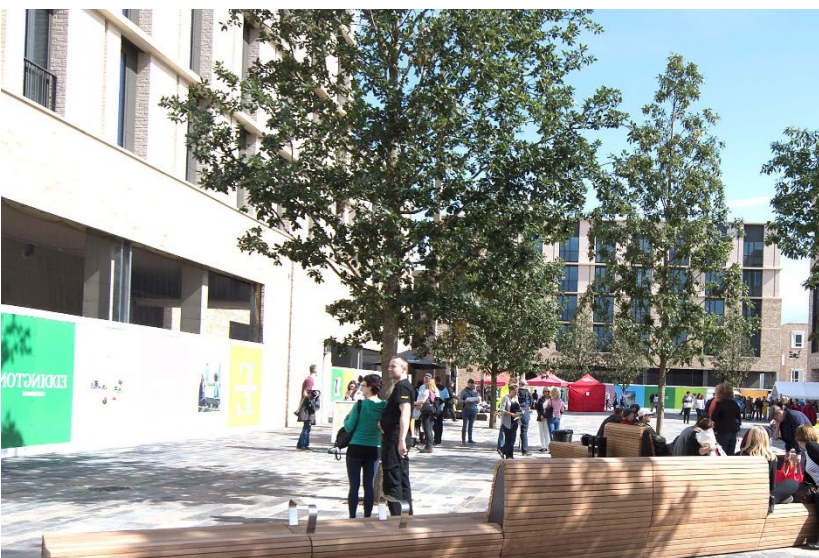
Relocation Support

The University recognises the importance of helping individuals to move and settle into a new area. We provide support and guidance to those relocating internationally or domestically to take up a post at the University of Cambridge, liaising with other University offices and selected partners to ensure comprehensive relocation support is available. This includes: accommodation, childcare, schools, banking, immigration and transport. If you would like further information, please visit <https://www.accommodation.cam.ac.uk/RelocationService/>. The Shared Equity Scheme and the Reimbursement of Relocation Expenses Scheme provide financial assistance to qualifying new staff members.

Accommodation Service

The University Accommodation Service helps staff, students and visiting scholars who are affiliated to the University in their search for suitable accommodation in Cambridge. The dedicated accommodation team can provide access to a wide range of University-owned furnished and unfurnished properties, and has a database of private sector accommodation available for short and long-term lets. For further information and to register with this free service please visit:

<https://www.accommodation.cam.ac.uk/>



What Cambridge can offer

We offer a comprehensive reward package to attract, motivate and retain high performing staff at all levels and in all areas of work.

The University offers a wide range of competitive benefits, from family leave entitlement, to shopping and travel discount schemes. Our generous annual leave package contributes to the positive wellbeing of our University employees. Sabbatical leave enables academics to focus on research and scholarship, whilst still maintaining their full salary. The University also has a [career break scheme](#) for academic and academic-related staff, with additional flexible working policies for all other staff.

Pay and benefits

The University salary structure includes automatic service-related pay progression in many of its grades and an annual cost of living increase. In addition to this, employees are rewarded for outstanding contribution through a number of regular pay progression schemes. The University offers attractive pensions schemes for employees, with an additional benefit of a salary exchange arrangement providing tax and national insurance savings.



CAMbens employee benefits

The University offers employees a wide range of competitive benefits, known as CAMbens. CAMbens offers something for everyone across a range of categories, including:

- Financial Benefits, including shopping discounts (both local and national) and a Payroll Giving scheme;
- Relocation and Accommodation Benefits, including relocation assistance and interest-free Rental Deposit Loans;
- Travel Benefits, including Cycle to Work, discounts on train season tickets and interest-free Travel to Work loans;
- Family Friendly and Lifestyle Benefits, including support with childcare and family friendly policies;
- Health and Wellbeing Benefits, including a University Staff Counselling Service, discounts at the University Sports Centre, and other local gyms, and healthcare schemes.



What Cambridge can offer

Family-friendly policies

The University recognises the importance of supporting its staff. We have a range of family-friendly policies to aid employees' work-life balance including a generous maternity, adoption and shared parental leave entitlement of 26 weeks' full pay, and paid emergency leave for parents and carers.

Other family-friendly support includes:

Our highly regarded workplace nurseries, a childcare salary exchange scheme and a high-quality holiday Playscheme are available to help support University employees with caring responsibilities (subject to demand and qualifying criteria). Further childcare information can be found here:

<https://www.childcare.admin.cam.ac.uk/>

The Newcomers and Visiting Scholars Group (<https://www.nvs.admin.cam.ac.uk/>) is an organisation within the University that welcomes the partners and families of visiting scholars and new members of the University. Run by volunteers, the group offers opportunities to visit interesting Cambridge venues, learn about the community, take part in social events and gain local knowledge while developing a strong support network of both residents and other newcomers.

Your wellbeing

The University's Sport Centre, Counselling Services and Occupational Health are just some of the support services available to University employees to promote their physical and mental wellbeing. The University delivers The Festival of Wellbeing annually, which is a programme of stimulating talks and activities, which aim to promote wellbeing and good mental and physical health. The University also hosts the [Cambridge Festival](#), which is a great opportunity to get your first taste of public engagement, through volunteering, supporting hands-on activities or proposing a talk.

Development opportunities

We support new employees to settle in through various activities as well as supporting their professional and career development on an ongoing basis. Our Personal and Professional Development (PPD) team provide development opportunities for all University employees, including face-to-face sessions, online learning modules and webinars. All employees also have unlimited access to LinkedIn Learning to support their development. Both new and existing employees can undertake funded Apprenticeships, which lead to a range of vocational and professional qualifications. We offer reduced staff fees for University of Cambridge graduate courses and the opportunity to attend lectures and seminars held by University departments and institutions. A range of University training providers also offer specialist learning and development in their own areas e.g. teaching and learning, digital literacy, finance, health and wellbeing, safety.



How to apply

Applications should be submitted online via the University of Cambridge jobs page www.jobs.cam.ac.uk by clicking “Apply online” in the job advert. You will need an email address to register for our online system.

Conversations about flexible working are encouraged at the University of Cambridge. Please feel free to discuss flexibility prior to applying (using the contact information below) or at interview if your application is successful.

Informal enquiries and enquiries about the application process are welcomed and should be directed to: LE43270@maths.cam.ac.uk

The closing date for applications is: 27 January 2025

Interviews will be held soon after the closing date.

