

Senior Research Laboratory Technician - Cryogenics

Department of Physics

Closing date: 30th March 2020

Job Reference: KA22387



Senior Research Laboratory Technician - Cryogenics

Salary:

£29,176 - £34,804

Grade:

6

Contract:

Permanent

Location:

Cavendish Laboratory,
West Cambridge

Department:

Physics

Responsible to:

**Cryogenics Facility
Manager**

Role Summary

The role will provide Cryogenic expertise and support to the research activities in the Cavendish Laboratory, which is the Department of Physics in the University of Cambridge.

The Department are moving to a new state of the art facility in 2023 and the cryogenic research will be primarily amalgamated into a world-class facility. This role will be key in the support to this facility and the research activities of the future.

The role includes a senior post in the production & supply of cryogenic materials to the research activities in the Department, other University Departments and external research companies. This post has high responsibility for managing the valuable resource and the Health & Safety of using these cryogenic materials.

To provide highly technical support to ensure the smooth running of the Cryogenic service to the research groups, department and external partners. This is a dual role, which offers good variety by working closely with the research groups and as a senior member of the Liquid Gases Service.

Working with the research groups, you will be assisting with their experiments along with maintaining its research equipment. You will be involved in the training and use of cryogenic materials to the junior researchers.

As a member of the Liquid Gases section, you will be supplying cryogenic materials to the research groups and external customers. This includes the supply and recovery of the valuable resource of Helium and the supply of Nitrogen liquid and gas. This role also acts as the deputy to the Cryogenics Manager in organising the distribution of the cryogenic materials along with the record keeping and accounting for the service. Running and maintenance of the Helium Liquefier equipment.

Senior Research Laboratory Technician - Cryogenics

Main duties and responsibilities

Resource Management:

Manufacture and prepare experimental equipment requiring highly specialised skills from verbal instruction to technical specifications.

Fabricate precision optical, electronic, computer controlled, mechanical, high pressure, cryogenic and vacuum equipment. Diagnose and repair faults on equipment, finding optimal solutions for minimum time and cost.

Perform complex engineering procedures to develop experimental rigs, conduct experiments on behalf of researchers and academics, analyse and interpret results in order to make changes to experimental processes.

Technical Advice:

Provide highly specialist technical advice to staff, research students and researchers on the design of experiments, and the specification of equipment required to undertake experimental activity. Develop specifications for highly specialist equipment, solutions, or Source suppliers as required, and negotiate pricing and service.

Provide specialist technical advice to staff, research students and researchers in the proper and safe application of cryogenic materials at the point of use, taking into account time and other constraints such as local conditions and arrangements

Laboratory Maintenance:

Train and work with staff, students, researchers and visitors in the correct, safe and efficient operation of cryogens in the Cavendish Laboratory. Monitor and maintain laboratory resources and equipment, including problem solving, repairs, expenditure within a set budget, sourcing new suppliers and place orders for consumables and equipment when required.

Inspect, maintain and repair the Facility's equipment, pressure vessels and systems to meet the statutory legal obligations, keeping proper accurate records of observations and work carried out.

Use the workshop facilities to effect repairs and modifications (Design and Manufacture) to parts of the system(s), so that fixes to otherwise costly problems can be resolved rapidly in-house.

Carry out regular leak/efficiency tests and inspections of the lab-wide helium recovery system and in/on end users' labs/equipment. Effect solutions to problems using own initiative and in conjunction with users and the CFM. Minimising helium leaks and losses is of the utmost importance (a 1% leak would cost the Lab ~£30K/year).

Provide advice and assistance to end users within their labs: repairs/modifications to cryostats, vacuum pumps and auxiliary equipment

4	<p><i>Operating the Helium Liquefier:</i></p> <p>Provide effective and efficient use of the liquefier and recovery system to support the research and teaching projects and work. Assume collective responsibility for the maintenance and repair of the equipment and act independently, at times, to rectify any faults. Act as a first line of communication and liaise with relevant companies to oversee repair or replacement where it is not possible to repair in-house.</p> <p>Inspect and maintain equipment and effect repairs where necessary to the legally binding regulations, keeping appropriate records up to date. Any system faults and failures need to be addressed quickly to avoid significant negative impact both in financial and research terms.</p>
5	<p><i>Running Liquid Helium & Nitrogen duties:</i></p> <p>Undertake and provide safe decanting of liquid Helium & Nitrogen into dewars. Undertake and provide timely and safe delivery of cryogenic dewars and vessels across Cambridge City and wider afield by means of the Facility's delivery van (including driving).</p> <p>Train and supervise junior members in the safe decanting of liquid Helium & Nitrogen into dewars.</p> <p>Record and interpret data for billing purposes. Inspect and maintain equipment and effect repairs where necessary to the legally binding regulations.</p>
6	<p><i>Health & Safety :</i></p> <p>Liaise with the departmental safety officer to ensure codes of practice and relevant safety regulations are implemented and observed within the research laboratory, carry out risk assessments. Be 'visible' as a 'champion' in implementing good Health and Safety practice. Provide vocal guidance to staff, researchers and students on the correct application, use and maintenance of cryogenic equipment and laboratory procedures (e.g. correct safety procedures in handling cryogenic equipment) and routine techniques. Introduce new staff and researchers to appropriate health and safety procedures within the laboratory. Maintain Departmental safety protocols and records.</p>
7	<p><i>Database & Records:</i></p> <p>Design and maintain laboratory databases so that the research/teaching group's work is up to date, accessible and easy to archive records for current and future members of staff.</p> <p>Receive and receipt incoming requests for cryogens. Negotiate and plan supply within the constraints of resource, equipment and time availability. Ensure auditable paper trails and cost centres on all approvals are in place prior to dispatch, ensuring all appropriate requisitioned authorisations are in place before approving orders.</p> <p>Check deliveries against purchase orders and delivery notes. Ensure end-user staff are notified of the arrival of cryogenic goods. Process invoices and delivery notes. Record auditable delivery trails for the ease of payments, data tracking and billing.</p>
8	<p><i>Budget management:</i></p> <p>Monitor expenditure against budgets for research consumables, liaise with Accounts with regard to purchases, check expenditure has been debited from the correct account and that spending is within budget, charge individual research groups for Cryogenic materials used and work that is undertaken, maintain laboratory stocks including procurement and purchase of equipment.</p>
9	<p><i>Deputy manager of the Cryogenic Facility.</i></p> <p>Take sole responsibility for the day to day operations of the Cryogenics Facility when the CFM is on leave. Liaise with the Laboratory Superintendent and advise on matters needing escalation. The role holder has the appropriate and specific skills, knowledge and experience to run this Facility which is a stand-alone facility.</p>
10	<p><i>Service improvement:</i></p> <p>Undertake research into new technologies to improve the service and methods of handling cryogenic materials. Introduce new and improved equipment and procedures to reduce the losses of Helium and Nitrogen in experimental work or transfer around the buildings/departments.</p>

Person specification

Key Skills and Experience		
Criteria	Description	Essential or Desirable
Experience	Practical experience of specialised laboratory activity and equipment	E
	Experience in providing training to groups and on a one-to-one basis.	E
	Practical experience of mechanical workshop work.	E
	Practical experience of high performance in a small team.	D
	Experience in the use and application of cryogenics and gas laws.	D
Skills	Specialist knowledge of relevant regulations and practice	E
	Good IT skills	E
	High degree of precision and accuracy	E
	Excellent communication skills	E
	Excellent organizational skills	E
	Demonstrate advanced knowledge of lab technician work involving a critical understanding of relevant theory and/or principles	E
Qualifications	A qualification equitable to HND/HNC level 4/5, vocational qualifications, or an equivalent level of practical experience.	E
		E
Additional requirements	Driving licence.	E
	On-call and weekend working (occasional and by prior mutual arrangement)	E

Department of Physics | Cavendish Laboratory



The Cavendish Laboratory was founded in 1871, with the simultaneous appointment of James Clerk Maxwell as the first Cavendish Professor. It has a distinguished history of contribution to science.

Twenty-nine Nobel prizewinners have worked for considerable periods within the laboratory, and the Cavendish is associated with many notable discoveries, including the identification of the electron and neutron, the structure of DNA, and the discovery of pulsars.

A new era is beginning for Physics at Cambridge, with construction work underway for a new purpose-built centre for world-leading research, replacing our current buildings which date from 1971. The new building, the Ray Dolby Centre, and our strategic plan, both represent a renaissance in the way we carry out physics research and achieve our research goals. The spirit of adventure and innovation will be fostered in the Cavendish tradition,

but adapted to the new needs of frontier research.

About the Department

At the heart of the new approach is a more flexible alignment of our research activities into research themes.

This change of emphasis has been inspired by a number of changes in the nature of contemporary physics research. See: <https://www.phy.cam.ac.uk/research>.

In addition to serving as a home for physics research at Cambridge, the new Cavendish Laboratory will be a top-class facility for the nation—much of the specialised research equipment in the new building will be made available to other institutions. The new facility has been designed to match the more exacting standards of current research, and to serve the educational needs of future generations of students much better than is possible at our existing site. Capacity for public events has also been incorporated into the design, so that our extensive programme of outreach work with schools, and with the general public, will continue to serve the local population well into the future. We are looking forward to moving into our new home in 2023.

Key information

Currently the Department comprises about 55 academic staff, 200 postdoctoral researchers, and 300 graduate students. Together with administrative and technical support staff and academic visitors, the Department hosts around 1000 people.

Department of Physics | Cavendish Laboratory



Artist's impression of the new Cavendish III, due to open in 2022.

Research themes

Research activities at the Cavendish span a wide range of physics.

There are seven strategic themes: Astrophysics, High Energy Physics, Biological and Biomedical Physics, Energy Materials, Emergent Quantum Phenomena, Assembly and Function of Complex Systems, and Quantum Devices and Measurements.

The themes encompass a growing range of research groupings: Astrophysics, Atomic, Mesoscopic & Optical Physics, Biological and Soft Systems, Detector Physics, High Energy Physics, Optoelectronics & Microelectronics, Nanophotonics, Quantum Matter, Theory of Condensed Matter, Scientific Computing, Semiconductor Physics, Structure and Dynamics, Surface and Fracture, and Thin-film Magnetism. Information about the current research activities in these areas is available at: www.phy.cam.ac.uk/research/.

Recent developments

The Department is engaged in a number of new inter- and cross-disciplinary research programmes.

In 2008 it established a new **Physics of Medicine** programme focusing on biological and biomedical applications of physics which is based in a purpose-built interdisciplinary centre on the Laboratory site. The **Battcock Centre for Experimental Astrophysics** opened in October 2013, adjacent to the **Kavli Institute for Cosmology** in Cambridge and to the main buildings of the Institute of Astronomy. This has enabled all Cambridge astronomers to be brought together in a single complex of buildings for the first time. The **Maxwell Centre**, designed to promote industrial collaboration, opened in April 2016.

The future

The complete replacement of the main laboratory buildings which date from the 1970s, has been approved, and Cavendish III is due to open in 2022, housing the majority of the laboratory's activities.

The school

The School of the Physical Sciences is one of the six Schools in the University of Cambridge and comprises the following Departments:

- Applied Mathematics and Theoretical Physics (DAMTP)
- Chemistry
- Earth Sciences
- Geography (including the Scott Polar Research Institute)
- Institute of Astronomy
- Issac 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.

Athena SWAN

The Department of Physics is very proud to be the first Physics Department in the UK to have been awarded an Athena SWAN Gold award from May 2014, having held a Silver award and also Juno Champion status since 2010. The Department is keen to promote support for staff with family commitments and a summary of some of the services on offer is at http://www.phy.cam.ac.uk/internal_resources/resources/families-at-the-cavendish-web.pdf

Terms of appointment

Tenure and probation

This appointment is permanent. Appointments will be subject to satisfactory completion of a six month probationary period.

Hours of Work and Working Pattern

Full-time, Monday to Friday, with some occasional on-call and weekend working required.

Pension

You will automatically be enrolled to become a member of CPS (Contributory Pension Scheme) – a defined benefit and defined contribution pension scheme. For further information please visit: www.pensions.admin.cam.ac.uk/.

Annual leave

Full time employees are entitled to annual paid leave of 36 days per year, including public holidays. In addition Assistant Staff may work additional time (10 minutes per working day) to accumulate TOIL which they can take with their leave. For full time staff this equates to a total of 5 additional days leave per year.

Paid holiday entitlement will increase by one day after nine years' unbroken service and thereafter by one additional day for each period of three years'

unbroken service up to a maximum of four additional days after eighteen years' service

General information

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.

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 <http://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. Alternatively, you may contact the HR Business Manager responsible for the department you are applying to via hrenquiries@admin.cam.ac.uk.



The University

The University of Cambridge is one of the world's oldest and most successful Universities, with an outstanding reputation for academic achievement and research. It is consistently ranked in the top 5 in World University Rankings and its graduates have won more Nobel Prizes than any other university in the world, including many in for key discoveries in life sciences. The University comprises more than 150 departments, faculties, schools and other institutions, plus a central administration and 31 independent and autonomous colleges.

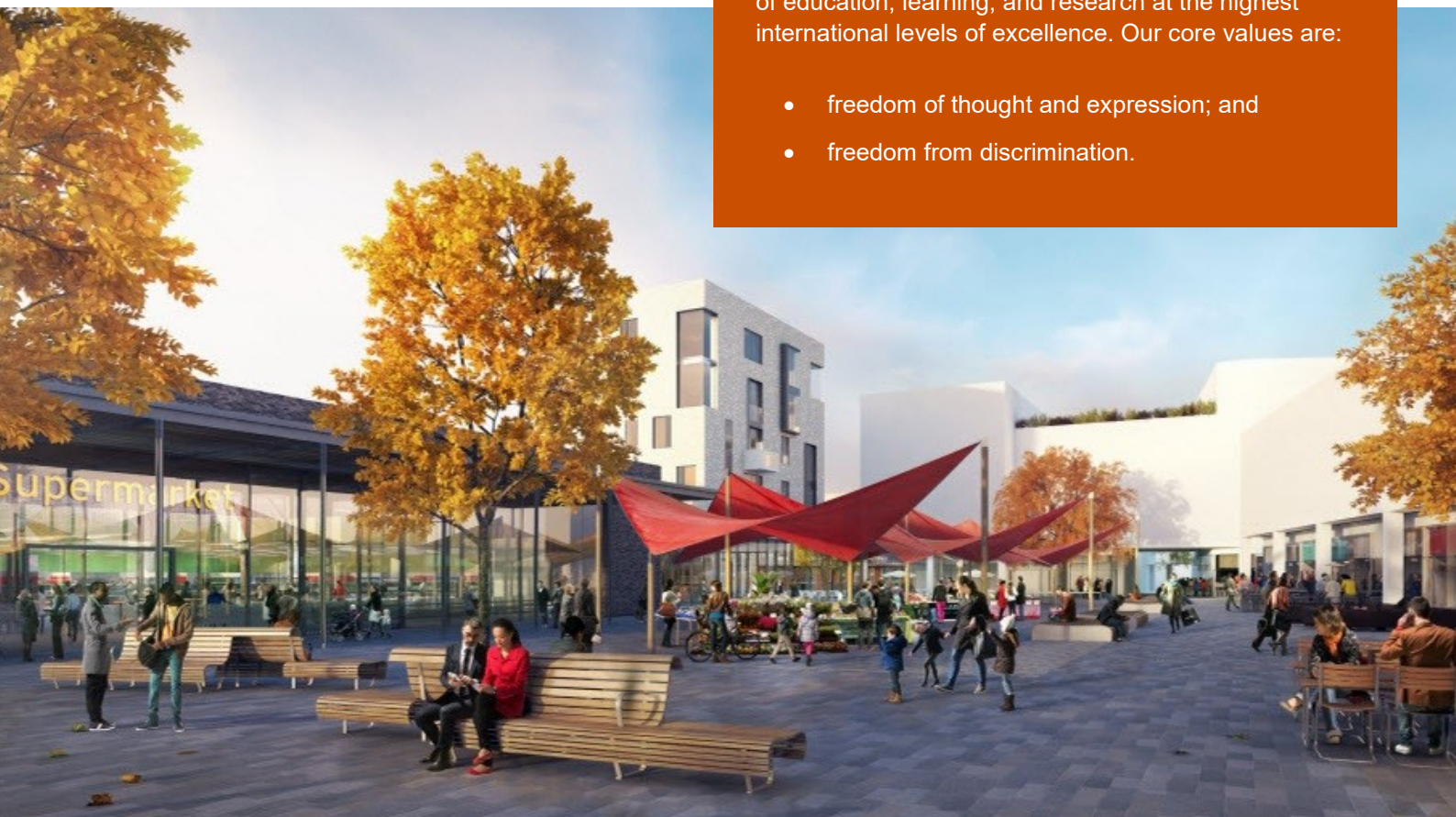
The University and the Colleges are linked in a complex historical relationship. The Colleges are self-governing, separate legal entities which appoint their own staff. They admit students, provide student accommodation and deliver small group teaching (supervisions). The University awards degrees and its faculties and departments provide lectures and seminars for students, determine the syllabi for teaching and conduct research.

There is much more information about the University at <http://www.cam.ac.uk/univ/works/index.html> which we hope you will find helpful.

Our sustained pursuit of academic excellence is built on a long history of first-class teaching and research within a distinctive collegiate system. For eight centuries our ideas and innovations have shaped the world. Our principal goal is to remain one of the world's leading universities in an increasingly competitive global higher education sector. Today the University of Cambridge is at the centre of a cluster of over 4,300 businesses employing 58,000 people. Our capital investment projects include the West Cambridge site, the North West Cambridge development and the growth of the Biomedical Campus in the south of the city. The North West Cambridge development includes the opening of a primary school – the first in the UK to be managed by a University. So we are deeply embedded in, and committed to serving, our local community. These are all conspicuous signs of a University that is not only adapting to new needs, but also anticipating the future.

Our mission is to contribute to society through the pursuit of education, learning, and research at the highest international levels of excellence. Our core values are:

- freedom of thought and expression; and
- freedom from discrimination.





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 £1.66 billion. Research income, won competitively from the UK Research Councils, the European Union (EU), major charities and industry, exceeds £400 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 students, provide

Our ideas and innovations have shaped the world. Our campaign, 'Dear World... Yours, Cambridge', will raise £2 billion to help us shape all our futures.

student accommodation and deliver small group teaching. The University awards degrees and its faculties and departments provide lectures and seminars for students and determine the syllabi for teaching and conducting research.

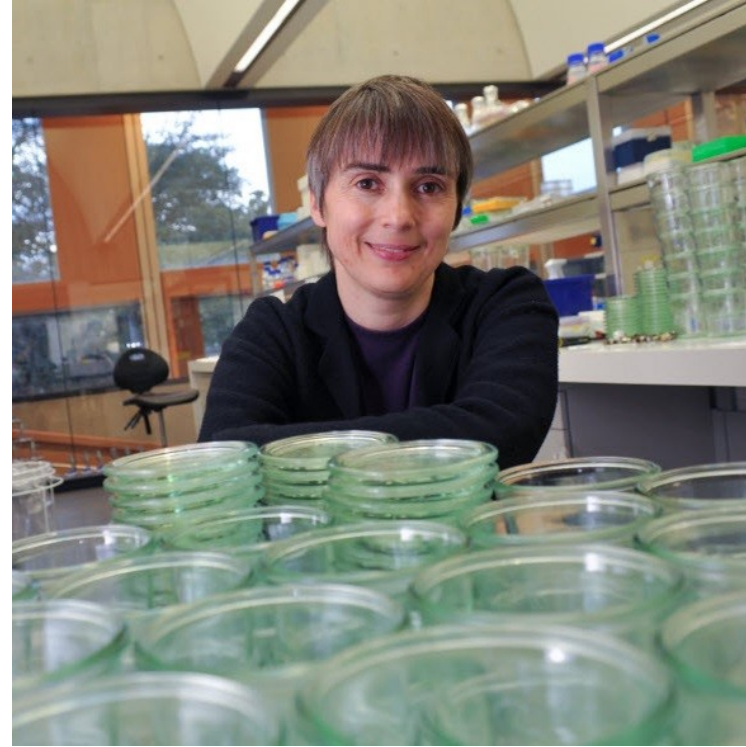
The University's estate is undergoing the most significant transformation in its history. Cambridge has been able to create a new science and technology campus to the west of the city centre, and is now expanding further to the north west of Cambridge including investing in affordable homes for University key workers and community facilities. Even with our 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 we continue to redevelop our historic city centre sites demonstrating our determination to ensure that we can offer the best facilities and opportunities for our staff and students.

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.

Working at the University

Working at Cambridge you will join a diverse, talented and innovative community, with more than 18,000 students and over 11,000 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. Furthermore, the University's Athena SWAN award recognises and celebrates good practice in recruiting, retaining and promoting women. We offer 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. The University has signed up to the Race Equality Charter, a notional framework for improving the representation, progression and success of minority ethnic staff and students within higher education.



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.

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.

Further information about attractions in and around Cambridge can be found at [Visit Cambridge](http://www.visitcambridge.org), the official tourism website for the city.



What Cambridge can offer

What the University can offer you

One of our core values at the University of Cambridge is to recognise and reward our staff as our greatest asset. We realise that it's our people who have built our outstanding reputation and that we will only maintain our leading position in the academic world by continuing to attract and retain talented and motivated people. If you choose to come and work with us, you will find that we offer:

Excellent benefits – You will be eligible for a wide range of competitive benefits and services, including numerous discounts on shopping, health care, financial services and public transport. We also offer defined benefits pension schemes and tax-efficient bicycle, car lease and charity-giving schemes.

We will help you balance your home and work life by providing you with generous annual leave entitlement and procedures for requesting a career break or flexible working arrangements if you need them. You will also have access to a range of well-being support services, including in-house Occupational Health and Counselling services. If you have childcare responsibilities, you may also benefit from the enhanced maternity/adoption pay, two nurseries and a holiday play scheme that we provide.

We are keen to welcome new employees from other parts of the UK and other countries to Cambridge. If you will be relocating to Cambridge on a centrally funded appointment of two years or more, you may be eligible for our relocation expenses scheme. The University [Accommodation Service](http://www.accommodation.cam.ac.uk/) (<http://www.accommodation.cam.ac.uk/>) will also be available to help you find suitable rented accommodation and to provide advice on renting arrangements and local facilities, if required. In addition, certain academic and academic-related appointments are eligible for the Shared Equity Scheme which offers financial assistance with the purchase of living accommodation.

A welcoming and inclusive environment - We will help you settle into your new role and working environment through a central [University induction event](#), local induction activities and our online induction package. Where appropriate to your role, you will have a probation period to provide a supportive framework for reviewing your progress and discussing your training and development needs.

If you are relocating to Cambridge, you and your family will be welcome to attend the Newcomers and Visiting Scholars Group, which provides an opportunity to find out more about Cambridge and meet other people new to the area.

Extensive development opportunities - The encouragement of career development for staff is one of the University's core values. We put this into practice through various services and initiatives, including:

- A [wide-range of training courses](#) and online learning packages.
- The [Staff Review and Development \(SRD\) Scheme](#), which is designed to enhance work effectiveness and facilitate career development post-probation.
- [Leave for career and personal development](#), including long-term study leave for assistant staff and sabbatical leave for academic staff.

The [CareerStart@Cam programme](#), which supports assistant staff roles without higher education qualifications to develop their skills, experience and qualifications. Assistant staff may also apply for financial assistance for study which results in a qualification.

[Reduced staff fees](#) for University of Cambridge graduate courses.

The opportunity to attend [lectures and seminars](#) held by University departments and institutions.

Policies and processes dedicated to the career development of researchers and the implementation of the principles of the Concordat, which have led to the University being recognised with an HR Excellence in Research Award by the European Commission.



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.

Informal enquiries are welcomed and should be directed to:

Peter Norman | Departmental Superintendent | pnm22@cam.ac.uk

If you have any queries regarding the application process please contact:

Tel: 01223 764816

Email: hr@phy.cam.ac.uk

The closing date for applications is 30th March 2020.



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