
ENGINEERING SCIENCE

Job title	Departmental Lecturer in High Speed Flows
Division	Mathematical, Physical and Life Sciences Division
Department	Engineering Science
Location	Central Oxford
Grade and salary	Grade 8 - £42,149 - £50,296 p.a with a discretionary range up to £54,943
Hours	Full time
Contract type	Fixed term for 5 years
Reporting to	Professor Matthew McGilvray
Vacancy reference	155596

Research topic	High Speed Flow Experiments
Principal Investigator / supervisor	Professor Matthew McGilvray
Funding partner	

The role

The post holder will engage in advanced study and academic research, to lecture and teach undergraduate and graduate students, and contribute to the teaching, research, and academic administration of the Department. He/she will lead independent research projects or specific areas of research within a broad programme.

The main research focus of the role is to lead a team of PDRAs and DPhil students within the Hypersonics Group in a range of research programmes from fundamental to applied. We invite applications of candidates with an expertise in high speed flows, particularly experiments within short duration hypersonic wind tunnels.

As well as supervising the work of the other team members and managing some of these projects, this job involves helping to develop the long-term strategy of the high-speed flow group, establishing and answering new research questions and providing both thought and technical leadership.



The main teaching focus will be in the field of engineering, with particular emphasis on thermodynamics and fluid mechanics. The post will involve lecturing and small group teaching as part of the undergraduate MEng course in Engineering Science.

In particular, we encourage applicants with a strong background in any of the following areas: short duration hypersonic facilities; non-intrusive instrumentation development; non-equilibrium thermochemistry; high speed aerodynamics and control; radiative heat transfer; convective heat transfer; high speed air-breathing engines; high speed transition; thermal protection system technology; unsteady flow dynamics.

Responsibilities

Research duties:

- Lead a team of Postdocs and DPhil students within the high-speed flow group, agreeing clear task objectives and delegating work to other team members as necessary.
- Plan and manage your team's research projects to fulfil existing and new research projects.
- Collaborate with colleagues in other research groups or in partner institutions.
- Formulate research questions to be addressed by the team and by individual research.
- Support the software development activities of the team, both by individual work and by training team members.
- Regularly write research articles for peer reviewed journals, book chapters, and reviews, present papers at conferences, and lead seminars to disseminate research findings
- Present papers at international conferences.
- Contribute to the long-term vision for the high-speed flow group research, through discussions and collaborations with industry partners, sector professionals and sponsors, to ensure that the projects are sustainable.
- Identify sources of research income, develop proposals, and make funding applications to obtain that income
- Manage independent research projects or specific areas of research within a broad programme, to include: developing research questions within a specific context; conducting original research; analysing qualitative and/or quantitative data from a variety of sources, and developing appropriate analytical protocols and techniques to support research
- Train other members of the team on pedagogy, specialist methodologies, or procedures

Teaching duties:

- Undertake advanced academic study to underpin lectures and class teaching.
- Lecture, tutor, conduct practical classes, and supervise undergraduate and postgraduate students.
- Produce lecture notes, course materials, reading lists, and reference guides.
- Engage in assessment and university examining, where appropriate.

- Act as first contact for student matters relating to attendance, conduct, coursework, performance, and welfare (referring matters to appropriate others).
- Plan and organise specific areas of the syllabus, contributing to the development of the syllabus for Thermofluids
- Modify course design, content, or delivery and propose changes to regulations as appropriate.
- Share in the work of departmental committees developing academic strategies and policies.
- Supervise demonstrators and technical staff in teaching laboratories

Selection criteria

Essential

- Proven experience in the field of high speed flows.
- Relevant PhD/DPhil, with post qualification research experience in high speed flows.
- Excellence in high speed flows demonstrated via strong publication record at the principal conferences and international recognition
- Experience of qualitative/quantitative research and analytical techniques
- Evidence of ability to write research proposals
- Ability to attract funding, demonstrated for example by successful grant applications
- Ability to lead and coordinate the activities of a team of PDRAs and DPhil students demonstrated by joint publications
- Ability to engage with the wider academic community, for example demonstrated by leading workshops and similar dissemination activities at leading international meetings
- A commitment to the academic mission through research leadership and teaching
- An aptitude for teaching and awareness of pedagogic methods
- Sufficient depth and breadth of knowledge in the subject of Thermofluids Engineering to develop course units (such as Coursework modules or specialised lecture courses for 3rd or 4th year undergraduates) and to supervise final-year undergraduate projects
- Ability to organise and prioritise conflicting tasks to organise the research within the project timetable and ensure interim deadlines are met
- Written communication skills, including academic papers

Desirable

- Experience in lecturing at graduate or undergraduate level
- Project management experience

Pre-employment screening

Standard checks

If you are offered the post, the offer will be subject to standard pre-employment checks. You will be asked to provide: proof of your right-to-work in the UK; proof of your identity; and (if we haven't done so already) we will contact the referees you have nominated. You will also be asked to complete a health declaration so that you can tell us about any health conditions or disabilities for which you may need us to make appropriate adjustments.

Please read the candidate notes on the University's pre-employment screening procedures at: <https://www.jobs.ox.ac.uk/pre-employment-checks>

High-Speed Flow Group

The high-speed flow group sits within the Oxford Thermofluids Institute, based at the Southwell Building. It is an internationally leading research lab, currently with 25 members, whose origins date back to the 1960s. The group works on a wide spectrum of fundamental to applied research, working closely with industry to ensure the immediate exploitation and impact of our research. It operates three large-scale high-speed wind tunnels as part of the UK National Wind Tunnel facility: The T6 Stalker tunnel; The High Density Tunnel; The Low Density Tunnel.

About the University of Oxford

Welcome to the University of Oxford. We aim to lead the world in research and education for the benefit of society both in the UK and globally. Oxford's researchers engage with academic, commercial and cultural partners across the world to stimulate high-quality research and enable innovation through a broad range of social, policy and economic impacts.

We believe our strengths lie both in empowering individuals and teams to address fundamental questions of global significance, while providing all our staff with a welcoming and inclusive workplace that enables everyone to develop and do their best work. Recognising that diversity is our strength, vital for innovation and creativity, we aspire to build a truly diverse community which values and respects every individual's unique contribution.

While we have long traditions of scholarship, we are also forward-looking, creative and cutting-edge. Oxford is one of Europe's most entrepreneurial universities and we rank first in the UK for university spin-outs, and in recent years we have spun out 15-20 new companies every year. We are also recognised as leaders in support for social enterprise.

Join us and you will find a unique, democratic and international community, a great range of staff benefits and access to a vibrant array of cultural activities in the beautiful city of Oxford.

For more information, please visit www.ox.ac.uk/about/organisation.

Engineering Science Department

Engineering teaching and research takes place at Oxford in a unified Department of Engineering Science whose academic staff are committed to a common engineering foundation as well as to advanced work in their own specialties, which include most branches of the subject. We have especially strong links with computer science, materials science, medicine and also the Saïd Business School. The Department employs 120 academic staff (this number includes 13 statutory professors appointed in the main branches of the discipline, and 25 full professors); in addition, there are nine visiting professors. There is an experienced team of teaching support staff, professional services and administrative staff and technicians. The Department has well-equipped laboratories and workshops, which together with offices, lecture theatres, library and other facilities have a net floor area of about 25,000 square metres.

The Department is ranked second in the world in the latest *Times Higher Education World University Rankings* for Engineering & Technology. Further information about the Department is available at www.eng.ox.ac.uk.

Teaching

We aim to admit 170-180 undergraduates per year to take a 4-year course leading to the MEng degree in Engineering Science. The course is accredited at MEng level by the major engineering institutions. The syllabus has a common core extending through the first two years. Specialist options are introduced in the third year, and the fourth year includes further specialist material and a major project.

Research

Research in the Department is particularly strong. We have approximately 600 research students and about 250 postdoctoral researchers. Direct funding of research grants and contracts, from a variety of sources, amounts to an annual turnover of approximately £70m.

According to the results of the six-yearly UK-wide assessment of university research, REF2014, published on 18th December 2014, the Department of Engineering Science is the best engineering department in the country. Based on the Grade Point Average (GPA) score adopted to produce the rankings, the Department was ranked first out of the 62 General Engineering Departments, ahead of Cambridge, Imperial College and UCL. The impact of the Department's research was also rated as number one in engineering in the UK.

Research activities fall into 8 broad headings, though there is much overlapping in practice: Information Engineering (Robotics, Computer Vision and Machine Learning); Control; Thermofluids; Materials and Mechanics; Civil and Offshore; Electrical and Optoelectronic; Chemical and Process; and Biomedical Engineering.

For more information please visit: <http://www.eng.ox.ac.uk/>

The Department of Engineering Science holds a bronze Athena Swan award to recognise advancement of gender equality: representation, progression and success for all.

The Mathematical, Physical, and Life Sciences Division

The Mathematical, Physical, and Life Sciences (MPLS) Division is one of the four academic divisions of the University. In the results of the six-yearly UK-wide assessment of university research, REF2014, the MPLS division received the highest overall grade point average (GPA) and the highest GPA for outputs. We received the highest proportion of 4* outputs, and the highest proportion of 4* activity overall. More than 50 per cent of MPLS activity was assessed as world leading.

The MPLS Division's 10 departments and 3 interdisciplinary units span the full spectrum of the mathematical, computational, physical, engineering and life sciences, and undertake both fundamental research and cutting-edge applied work. Our research addresses major societal and technological challenges and is increasingly focused on key interdisciplinary issues. MPLS is proud to be the home of some of the most creative and innovative scientific thinkers and leaders working in academe. We have a strong tradition of attracting and nurturing the very best early career researchers who regularly secure prestigious fellowships

We have around 6,000 students and play a major role in training the next generation of leading scientists. Oxford's international reputation for excellence in teaching is reflected in its position at the top of the major league tables and subject assessments.

MPLS is dedicated to bringing the wonder and potential of science to the attention of audiences far beyond the world of academia. We have a strong commitment to supporting public engagement in science through initiatives including the Oxford Sparks portal (<http://www.oxfordsparks.net/>) and a large variety of outreach activities. We also endeavour to bring the potential of our scientific efforts forward for practical and beneficial application to the real world and our desire is to link our best scientific minds with industry and public policy makers.

For more information about the MPLS division, please visit: <http://www.mpls.ox.ac.uk/>

How to apply

Applications are made through our e-recruitment system and you will find all the information you need about how to apply on our Jobs website <https://www.jobs.ox.ac.uk/how-to-apply>.

Your application will be judged solely on the basis of how you demonstrate that you meet the selection criteria stated in the job description.

If you would like to apply, click on the **Apply Now** button on the 'Job Details' page and follow the on-screen instructions to register as a new user or log-in if you have applied previously. Please provide details of two referees and indicate whether we can contact them now.

You must upload a CV and a supporting statement. The supporting statement should explain how you meet the selection criteria for the post using examples of your skills and experience. This may include experience gained in employment, education, or during career breaks (such as time out to care for dependants).

References

Please give the details of people who can provide a reference for you. If you have previously been employed, your referees should be people who have managed you, and at least one of them should be your formal line manager in your most recent or current job. Otherwise they may be people who have supervised you in a recent college, school, or voluntary experience. It is helpful if you can tell us briefly how each referee knows you (e.g. 'line manager', 'college tutor'). Your referees should not be related to you.

We will assume that we may approach them at any stage unless you tell us otherwise. If you wish us to ask for your permission before approaching a particular referee, or to contact them only under certain circumstances (for example, if you are called to interview) you must state this explicitly alongside the details of the relevant referee(s).

Please upload all documents **as PDF files** with your name and the document type in the filename.

All applications must be received by **midday** UK time on the closing date stated in the online advertisement.

Information for priority candidates

A priority candidate is a University employee who is seeking redeployment because they have been advised that they are at risk of redundancy, or on grounds of ill-health/disability. Priority candidates are issued with a redeployment letter by their employing department(s).

If you are a priority candidate, please ensure that you attach your redeployment letter to your application (or email it to the contact address on the advert if the application form used for the vacancy does not allow attachments).

If you need help

Help and support is available from: <https://hrsystems.admin.ox.ac.uk/recruitment-support>

If you require any further assistance please email recruitment.support@admin.ox.ac.uk.

To return to the online application at any stage, please go to: www.recruit.ox.ac.uk.

Please note that you will receive an automated email from our e-recruitment system to confirm receipt of your application. **Please check your spam/junk mail** if you do not receive this email.

Important information for candidates

Data Privacy

Please note that any personal data submitted to the University as part of the job application process will be processed in accordance with the GDPR and related UK data protection legislation. For further information, please see the University's Privacy Notice for Job Applicants at: <https://compliance.admin.ox.ac.uk/job-applicant-privacy-policy>. The University's Policy on Data Protection is available at: <https://compliance.admin.ox.ac.uk/data-protection-policy>.

The University's policy on retirement

The University operates an Employer Justified Retirement Age (EJRA) for all academic posts and some academic-related posts. The University has adopted an EJRA of 30 September before the 69th birthday for all academic and academic-related staff in posts at **grade 8 and above**. The justification for this is explained at: <https://hr.admin.ox.ac.uk/the-ejra>

For **existing** employees, any employment beyond the retirement age is subject to approval through the procedures: <https://hr.admin.ox.ac.uk/the-ejra>

There is no normal or fixed age at which staff in posts at **grades 1–7** have to retire. Staff at these grades may elect to retire in accordance with the rules of the applicable pension scheme, as may be amended from time to time.

Equality of opportunity

Entry into employment with the University and progression within employment will be determined only by personal merit and the application of criteria which are related to the duties of each particular post and the relevant salary structure. In all cases, ability to perform the job will be the primary consideration. No applicant or member of staff shall be discriminated against because of age, disability, gender reassignment, marriage or civil partnership, pregnancy or maternity, race, religion or belief, sex, or sexual orientation.

Benefits of working at the University

Employee benefits

University employees enjoy 38 days' paid holiday, generous pension schemes, travel discounts, and a variety of professional development opportunities. Our range of other employee benefits and discounts also includes free entry to the Botanic Gardens and University colleges, and discounts at University museums. See <https://hr.admin.ox.ac.uk/staff-benefits>

University Club and sports facilities

Membership of the University Club is free for all University staff. The University Club offers social, sporting, and hospitality facilities. Staff can also use the University Sports Centre on Iffley Road at discounted rates, including a fitness centre, powerlifting room, and swimming pool. See www.club.ox.ac.uk and <https://www.sport.ox.ac.uk/>.

Information for staff new to Oxford

If you are relocating to Oxfordshire from overseas or elsewhere in the UK, the University's Welcome Service website includes practical information about settling in the area, including advice on relocation, accommodation, and local schools. See <https://welcome.ox.ac.uk/>. There is also a visa loan scheme to cover the costs of UK visa applications for staff and their dependents. See <https://staffimmigration.admin.ox.ac.uk/visa-loan-scheme>

Family-friendly benefits

With one of the most generous family leave schemes in the Higher Education sector, and a range of flexible working options, Oxford aims to be a family-friendly employer. We also subscribe to the Work+Family Space, a service that provides practical advice and support for employees who have caring responsibilities. The service offers a free telephone advice line, and the ability to book emergency back-up care for children, adult dependents and elderly relatives. See <https://hr.admin.ox.ac.uk/my-family-care>

The University has excellent childcare services, including five University nurseries as well as University-supported places at many other private nurseries.

For full details, including how to apply and the costs, see <https://childcare.admin.ox.ac.uk/>

Disabled staff

We are committed to supporting members of staff with disabilities or long-term health conditions. For further details, including information about how to make contact, in confidence, with the University's Staff Disability Advisor, see <https://edu.admin.ox.ac.uk/disability-support>

Staff networks

The University has a number of staff networks including the Oxford Research Staff Society, BME staff network, LGBT+ staff network and a disabled staff network. You can find more information at <https://edu.admin.ox.ac.uk/networks>

The University of Oxford Newcomers' Club

The University of Oxford Newcomers' Club is an organisation run by volunteers that aims to assist the partners of new staff settle into Oxford, and provides them with an opportunity to meet people and make connections in the local area. See www.newcomers.ox.ac.uk.