



## Job Description and Person Specification

<b>Post</b>	<b>University Lecturership (TF) in Engineering Science (Mechanical Engineering)</b>
<b>Department/Faculty</b>	<b>Engineering Science</b>
<b>Division</b>	<b>Mathematical, Physical and Life Sciences</b>
<b>College</b>	<b>Balliol College</b>
<b>Salary</b>	<b>£42,733 - £57,431pa</b>

### Overview of the post

Applications are invited for the post of University Lecturer in Engineering Science (Mechanical Engineering) with effect from 1<sup>st</sup> September 2012 or as soon as possible thereafter. The successful candidate will also be appointed to a Tutorial Fellowship at Balliol College.

A University Lecturership in Engineering Science is the major career grade post in the Department, appropriate to someone with experience in teaching and research, and able to make a significant contribution to the Department and College. Proven academic distinction can be recognised by the University by the award of the title of Professor.

This appointment will add further strength to the Department's mechanical engineering research group in solid mechanics and materials engineering. This appointment is being made to strengthen and further develop our research activities in composite materials. Applications are welcome in any area related to the performance of composite and lightweight materials, including, polymer, metal ceramic, biological and multifunctional composites, foams and lattice materials. The successful candidate will be expected to apply for and obtain external funding to enable development of independent research as well as to develop links with other departments across the University and externally as appropriate.

The successful candidate will assist in the teaching of her/his subject at both undergraduate and graduate level. Undergraduate teaching may include lectures and practical classes, and the supervision of undergraduate design and project work (see [www.eng.ox.ac.uk/undergraduate/eng.html](http://www.eng.ox.ac.uk/undergraduate/eng.html)). Graduate teaching will involve the supervision of MSc and DPhil students. The subjects taught would be expected to be in the general fields of solid mechanics and materials engineering, depending on the interests of the appointee.

To assist in setting up new research activities, the Department will provide an equipment dowry of £10k, a computer and an annual support fund of £500, and access to Departmental and University research support funds (which must be bid for). Further funding for the set-up costs of experimental facilities can be made available, and laboratory and office space will be provided. The appointee will be helped in seeking and acquiring grants from research councils (e.g. through the EPSRC First Grant Scheme) and industry.

Queries about the post should be addressed to Professor G.T. Houlsby, FEng, Head of Department at [head@eng.ox.ac.uk](mailto:head@eng.ox.ac.uk), or telephone: +44 (0) 1865 273003.

All enquiries will be treated in strict confidence; they will not form part of the selection decision.

## Duties of the post

The University Lecturer will be a member of both the University and the College community. He or she will be part of a lively and intellectually stimulating research community which performs to the highest international levels in research and publications and will have access to the excellent research facilities which Oxford offers. He or she will have a role to play in the running of the College as a member and trustee of its Governing Body.

The main duties of the **University** post are as follows:

### *Research*

- to engage in original research in the field of Mechanical Engineering, with an emphasis on Materials and Solid Mechanics;
- to secure research funding and engage in the management of research projects;
- to disseminate his/her research through publication in scholarly journals, participation in international conferences and seminars, and through other media;
- to engage in knowledge transfer activities.

### *Teaching*

- to carry out teaching at undergraduate and graduate level including lectures, classes, demonstrations, and project supervision, under the direction of the Head of Department;
- to supervise research students.

### *Examining*

- to take part in University examining as and when requested to do so.

### *Administration*

- to participate in the administration of the department as and when requested by the Head of Department.

The main duties of the **College** post are as follows:

- to engage in advanced study and research;
- to give six hours per week of tutorials during the eight weeks of full term, averaged over the year;
- to share responsibility for the teaching of Engineering Science and of Engineering Economics and Management within the college, including monitoring the academic progress of students, setting and marking of college examinations, and tutorial teaching. The successful candidate should be able to offer tutorials in core mechanics and materials papers and be willing to teach tutorials in other areas of the course, such as mathematics;
- to take part in the admission of graduates and undergraduates;
- to have responsibility of pastoral care for undergraduate students;
- to act as college adviser for graduate students;
- to take part in the administration of the College by participation in the Governing Body and other committees.

## Person specification

Applications will be judged only against the criteria which are set out below. Applicants should make sure that their application shows very clearly how they believe that their skills and experience meet these criteria.

Oxford is committed to fairness, consistency and transparency in selection decisions, and unsuccessful applicants may request feedback against the published selection criteria for the specific post. (We are, however, unable to provide general advice about the suitability of applicants' cvs for future vacancies in Oxford or elsewhere.) Chairs of selection committees will be aware of the principles of equality of opportunity and fair selection and there will be a member of each gender wherever possible.

The successful candidate will demonstrate the following.

### *Essential*

- (a) A doctorate in the field of Mechanical Engineering or a related subject;
- (b) Proven research record of high quality at international level; demonstrated by previous achievements, publications in recognised journals, and a good written research plan appropriate to the Department's research standing.
- (c) Significant research potential in solid mechanics and/or materials engineering, and research interests that are relevant to the current range of activities within the Department.
- (d) Ability to attract research funding and develop an independent programme of research;
- (e) Experience of and ability to teach effectively, both at undergraduate and graduate level, a wide range of topics within the field of Mechanical Engineering;
- (f) Ability to supervise graduate students;
- (g) Excellent interpersonal skills necessary for undertaking tutorial teaching and the pastoral care of students;
- (h) Ability and willingness to undertake the full range of administrative duties both within the department and the College.

### *Desirable*

- (i) Excellent track record of obtaining research grants;
- (j) Experience of research collaborations at national and international level;
- (k) Experience of supervising research students;
- (l) Experience or an interest in developing links with Industry.

## How to apply

There is no application form. Applications must include:

- your full contact details including email and full postal addresses, and a telephone number;
- a covering letter or statement explaining how you meet the criteria set out above;
- a full CV and publications list;
- an indication of where you first heard about this post;

- the names and contact details (postal and e-mail addresses and telephone number) of **three** referees.

You should contact all three of your referees before applying, to ensure they are aware of your application and of the requirements for the post, and to ensure that they would be content to write a reference for you for this post, if they were asked to do so.

The University will assume that it is free to approach your referees at any stage unless your application specifies otherwise. Therefore if you would prefer a referee or referees to be approached only with your specific permission or if you would prefer them to be approached only if you are being called for interview on the final short list, then you must state this in your application, alongside the details of the relevant referee(s). You should provide the names and full contact details of three referees even if you do not wish them to be contacted yet.

Applications may be sent by e-mail to [head@eng.ox.ac.uk](mailto:head@eng.ox.ac.uk), or by post to:

Professor G. T. Houlsby MA DSc FEng FICE  
Head of Department  
Department of Engineering Science  
University of Oxford  
Parks Road  
Oxford, OX1 3PJ

The deadline for applications is 12.00 noon on Monday 16<sup>th</sup> January 2012. Please quote DF11BAL in all correspondence.

Should you have any queries about how to apply, please contact Professor G.T. Houlsby, FEng, Head of Department at [head@eng.ox.ac.uk](mailto:head@eng.ox.ac.uk), or telephone: +44 (0) 1865 273003.

All applications will be acknowledged after receipt and will be considered by the selection committee as soon as possible after the closing date. All shortlisted candidates will be interviewed and will be asked to give a short presentation to the committee as part of the interview.

It is expected that interviews will be held on 22nd February 2012, but the date will be confirmed at a later stage. Information for overseas candidates who require a visa to travel to the UK for interview may be found at [www.ukba.homeoffice.gov.uk/visitingtheuk/visitors/](http://www.ukba.homeoffice.gov.uk/visitingtheuk/visitors/)

The interviewing process for the final short-listed candidates is expected to be as follows:

**Morning:** Each candidate will be asked to present a 30-minute seminar in the Department of Engineering Science on a suitable topic from their current research (20 minutes presentation plus 5-10 minutes questions). The seminar will be attended by members of the Selection Committee, and other interested members of the Department and the College (only some of whom will be experts in the specialist field of the appointment).

**Afternoon:** The formal interview by the Selection Committee will be held in the Department of Engineering Science. This will last about 45 minutes, and will include discussion of research interests and directions, teaching interests and expertise and experience, including tutorial teaching, undergraduate projects and other aspects of the job.

During the time they are not giving their seminar, short-listed candidates will have an opportunity to visit the Department and College. Neither of these visits constitutes any part of the selection process. Overnight accommodation will be arranged by the College, if desired.

Applications for this post will be considered by a selection committee containing representatives from both the Department of Engineering Science and Balliol College. The selection committee is responsible for conducting all aspects of the recruitment and selection process; it does not, however, have the authority to make the final decision as to who should be appointed. The final decision will be made by the Mathematical, Physical and Life Sciences divisional board and the governing body of Balliol College on the basis of a recommendation made by the selection

committee. No offer of appointment will be valid, therefore, until and unless the recommendation has been approved by both the divisional board and the governing body, and a formal contractual offer has been made.

# Information for Applicants for the University Lecturership in Engineering Science (Mechanical Engineering)

## The University

The University of Oxford aims to sustain excellence in every area of its teaching and research, and to maintain and develop its position as a leader amongst world-class universities. Placing an equally high value on research and on teaching, the colleges, departments and faculties of Oxford aspire both to lead the international research agenda and to offer a unique and exceptional education to our undergraduate and graduate students.

Oxford's self-governing community of scholars includes university professors, readers, and lecturers, college tutors, senior and junior research fellows and over 2,500 other university research staff. The University aims to provide facilities and support for colleagues to pursue innovative research and outstanding teaching, by responding to developments in the intellectual environment and society at large, and by forging close links with the wider academic world, the professions, industry and commerce. The Strategic Plan, detailing strategy for the period 2008-12, can be found at <http://www.admin.ox.ac.uk/prs/planningcycle/stratplan.shtml>.

Research at Oxford combines disciplinary depth with an increasing focus on inter-disciplinary and multi-disciplinary activities addressing a rich and diverse range of issues, from deciphering ancient texts and inscriptions using modern scientific and computational methods developed in Oxford, through to global health, climate change, ageing, energy and the effects on our world of rapid technological change.

Oxford seeks to admit undergraduate students with the intellectual potential to benefit fully from the college tutorial system and small group learning to which Oxford is deeply committed. Meeting in small groups with their tutor, undergraduates are exposed to rigorous scholarly challenge and learn to develop their critical thinking, their ability to articulate their views with clarity, and their personal and intellectual confidence. They receive a high level of personal attention from leading academics.

Oxford has a strong postgraduate student body which now numbers about 7,000, well over a third of the full-time students. Postgraduates are attracted to Oxford by the international standing of the faculty, by the rigorous intellectual training on offer, by the excellent research and laboratory facilities available, and by the resources of the museums and libraries, including one of the world's greatest libraries, the Bodleian.

For more information please visit [www.ox.ac.uk](http://www.ox.ac.uk)

## The Mathematical, Physical, and Life Sciences Division

The Mathematical, Physical, and Life Sciences Division (MPLS) is one of the four academic divisions of the University. Oxford is widely recognised as one of the world's leading science universities. In the 2008 UK Research Assessment Exercise over 70% of research activity in MPLS was judged to be world-leading (4\*) or internationally excellent (3\*), and Oxford was ranked first in the UK across the mathematical sciences as a whole.

The MPLS division's ten departments and three 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. We have over 6,000 students and research staff, and generate over half of our funding from external research grants. Our research addresses major societal and technological challenges and is increasingly interdisciplinary in nature. We collaborate closely with colleagues in Oxford across the medical sciences, social sciences and humanities, as well as with researchers from around the world.

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

## The Department of Engineering Science

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 specialities which include most branches of the subject. We have especially strong links with computing, materials science, medicine and also with economics and management studies. The Department employs 72 academic staff (this number includes ten statutory Professors appointed in the main branches of the discipline, and 24 other professors in the Department); in addition there are nine Visiting Professors. There is an experienced team of teaching support staff, administrative and clerical 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 16,000 square metres.

Further information about the Department is available at [www.eng.ox.ac.uk](http://www.eng.ox.ac.uk)

### *Teaching*

We aim to admit 160-180 undergraduates per year, all of whom take 4-year courses leading to the MEng degree. Around 80% of the undergraduates read the broadly-based Engineering Science course. The remainder study for a joint degree in Engineering, Economics and Management. The courses are 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 280 research students and about 80 Research Fellows and Postdoctoral researchers. Direct funding of research grants and contracts, from a variety of sources, amounts to an annual turnover of approximately £10M in addition to general turnover of about £12M. The Department achieved the highest grade (5\*A) in the 1996 and 2001 Research Assessment Exercises. In the Research Assessment Exercise of 2008, 85% of the Department's research was rated as 4\* or 3\* (world-leading or internationally excellent). The research activities of the department fall into seven broad headings, though there is much overlapping in practice: Turbomachinery; Materials Engineering; Civil and Offshore; Information, Control and Vision; Electrical and Optoelectronic; Chemical and Process; Biomedical Engineering.

### *Materials and Solid Mechanics*

The Solid Mechanics and Materials Engineering Group is one of the largest research groups within the department. It currently includes nine members of academic staff: Professors Alan Cocks, David Hills, David Nowell, Paul Buckley, Alexander Korsunsky, and Fionn Dunne and Drs Nik Petrinic, John Huber, and Clive Siviour. Professor Cocks holds the Professorship of Materials Engineering and acts as head of the group. The group contains the Rolls-Royce UTC in Solid Mechanics under the Directorship of Professor Hills. The total turnover of the group is in excess of £2m per annum. Our research activities are supported by five technicians, an administrator and a computing support officer. These people, together with the academic staff, form the stable core of the group's personnel. In addition, there are about forty research students, research assistants, post-doctoral assistants and academic visitors, most of whom have a typical association of three to four years.

The group conducts research across a wide range of areas within Solid Mechanics and Materials Engineering. We have extensive laboratory facilities in the centre of Oxford and in Begbroke on the outskirts of the city for testing materials and components across a range of environmental conditions and strain-rates. A major theme of our research is to develop an in-depth understanding of the processing and performance of engineering materials by integrating experiment, theory and computational modelling. Much of our research is relevant to the long-term needs of industry and we have particularly strong links with the aerospace, automotive, defence, energy and marine sectors. There are increasing demands for the development of composite materials and systems to achieve the high level of performance demanded by these sectors.

Further details of the group's research activities may be found on the group website (<http://www.eng.ox.ac.uk/solidmech/home/Home.html>).

## Balliol College

There are 38 self-governing and independent colleges at Oxford, giving both academic staff and students the benefits of belonging to a small, interdisciplinary community as well as to a large, internationally-renowned institution. The collegiate system fosters a strong sense of community, bringing together leading academics and students across subjects, and from different cultures and countries.

Balliol is one of the best known of all the Oxford colleges. It combines an outstanding academic reputation and strong sense of collective identity with a welcoming and cosmopolitan environment. It has approximately 400 undergraduates and a roughly equal number of graduates, and receives amongst the largest number of applications per place at both undergraduate and graduate level.

The successful post-holder will be a full member of the College's Governing Body of 63 Fellows, which meets three times a term. He or she will also become a full member of the Senior Common Room.

More information about the College may be found at: [www.balliol.ox.ac.uk](http://www.balliol.ox.ac.uk)

Balliol admits 9 students each year on average, for both Engineering Science and Engineering, Economics and Management. Balliol has two Fellows in Engineering Science (rising to three with the successful appointment). Professor Dominic O'Brien teaches electrical subjects and has research interests in optical communications. Dr Robert Field teaches thermodynamics and fluid mechanics and his research area is in Chemical Engineering. For Engineering, Economics and Management Professor Tom Noe is the director of studies in Management and Dr Suellen Littleton is the College Lecturer in the subject. Professor David Vines and Dr James Forder teach Economics.

The successful candidate should be able to offer tutorials in core mechanics and materials papers and be willing to teach tutorials in other areas of the course, such as mathematics.

### *College benefits*

Balliol operates a Teaching Remission policy in early career appointments, and provides a sabbatical leave policy of one term for every six terms worked. Leave may either be taken term by term as earned or accumulated (within certain constraints). It is the College's policy to support applications for other periods of academic leave funded by outside sources, such as research councils, wherever possible. The College provides for maternity and paternity leave on the same basis as the University.

In addition, the following benefits are available:

- An allowance for housing costs (currently £5,200 per year), or single accommodation in College provided free of charge.
- Eligibility to bid for College housing, where available.
- Eligibility for places for pre-school children at Balliol Day Nursery.
- An annual Academic Support Allowance of up to £975 to cover purchase of academic books, conference travel, and other research-related expenses.
- Common Table: free breakfast, lunch and dinner in College when the kitchens are open.



- Use of a teaching room.
- An annual Entertainment Allowance for events involving students of the College.
- Access to postal, fax, and photocopying facilities, in addition to social facilities such as rooms for meetings and overnight accommodation for academic visitors.

The lecturer will have the option of becoming or remaining a member of the Universities Superannuation Scheme (USS). Further information about the college and in particular the benefits to the appointee of the association can be found in the college website.

# Standard Terms and Conditions

## *Salary, benefits and pension*

The successful candidate will be appointed on the Oxford scale for university lecturers, (the salary being in the range of £42,733 - £57,431 per annum). Lecturers appointed below the top of this range will receive annual increments until they reach the top point. There is also an annual 'cost-of-living' review. Departments may also, in wholly exceptional cases, propose the awarding within the substantive scale of additional increments to lecturers at any time during their appointment.

Additional remuneration is currently paid to those undertaking examining and graduate supervision.

Eligible staff may join the Universities Superannuation Scheme. Details are available on the website at <http://www.admin.ox.ac.uk/finance/pensions/uss/>.

## *Length of appointment*

Upon completion of an initial period of appointment (which is normally five years), a university lecturer is eligible for reappointment until retiring age, subject to the provisions of the Statutes and Regulations of the University. Evidence of lecturing competence and of substantial progress in research are prerequisites for reappointment to the retiring age.

For all academic and academic-related staff the University has adopted a retirement age of 30 September before the 68th birthday. There is a procedure for requesting an extension of employment beyond that date.

## *Sabbatical leave and outside commitments*

All lecturers may apply for sabbatical leave to allow them to focus on their research. In general, one term of leave is available for each six terms worked. This leave may either be taken as one term of leave after 6 terms of service, or accumulated and taken as one year of leave after 6 years of service.

Lecturers may also spend up to 30 working days in each year on projects outside their employment duties, such as consultancy, spin-out activity and membership of research councils and other bodies. There is no limit to the amount of money which staff may earn from these activities. Full details are available on the university website at <http://www.admin.ox.ac.uk/ps/staff/codes/outsidecov.shtml>. Guidance on ownership of intellectual property (<http://www.admin.ox.ac.uk/statutes/regulations/182-052.shtml>) and managing conflicts of interest (<http://www.admin.ox.ac.uk/researchsupport/integrity/conflict/policy/>) is also available on the university website.

## *Relocation expenses*

Subject to HMRC regulations and the availability of funding, a relocation allowance may be available. Further details are available on the website at <http://www.admin.ox.ac.uk/finance/expenses/relocationscheme/>.

## *Family support*

The University has generous maternity and adoption leave arrangements, and also offers support leave to fathers and partners. Details are available on the website at <http://www.admin.ox.ac.uk/ps/staff/family/> and <http://www.admin.ox.ac.uk/ps/staff/academic/matleave.shtml>.

All staff are eligible to apply to use the University nurseries (although there is a long waiting list for nursery places), and the full range of tax and National Insurance savings scheme is in operation. Details are available on the University's childcare website at <http://www.admin.ox.ac.uk/eop/childcare/>.

The University will try to accommodate flexible working patterns as far as possible and there is considerable flexibility in the organisation of duties. More information on family support and flexible working policies is available on the website at <http://www.admin.ox.ac.uk/ps/staff/family/>.

#### *Facilities and services*

The University has a range of facilities and benefits for its staff; more details are available on the website at <http://www.admin.ox.ac.uk/ps/staff/benefits/>.

The University Disability Office provides support to staff and students with a disability and may be contacted through its website at <http://www.admin.ox.ac.uk/eop/disab/>.

#### *Equality of opportunity*

The policy and practice of the University of Oxford require that all staff are offered equal opportunities within employment. 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. Subject to statutory provisions, no applicant or member of staff will be treated less favourably than another because of age, disability, gender reassignment, marriage or civil partnership, pregnancy or maternity, race, religion or belief, sex, or sexual orientation.

#### *Medical questionnaire and the right to work in the UK*

The appointment will be subject to the satisfactory completion of a medical questionnaire and the provision of proof of the right to work in the UK.

Applicants who would need a work visa if appointed to the post are asked to note that under the UK's points-based migration system they will need to demonstrate that they have sufficient points, and in particular that:

(i) they have sufficient English language skills (evidenced by having passed a test in English, or coming from a majority English-speaking country, or having taken a degree taught in English)

and

(ii) that they have sufficient funds to maintain themselves and any dependents until they receive their first salary payment.

Further information is available at:

<http://www.ind.homeoffice.gov.uk/workingintheuk/tier2/general/>

#### *Special arrangements*

Oxford welcomes applications from candidates who have a disability. These documents will be made available in large print, audio or other formats on request. Applicants invited for interview will be asked whether they require any particular arrangements to make the interview more convenient and effective for them.

#### *Data Protection*

All data supplied by candidates will be used only for the purposes of determining their suitability for the post<sup>1</sup> and will be held in accordance with the principles of the Data Protection Act 1998 and the University's Data Protection Policy (available on the website at <http://www.admin.ox.ac.uk/councilsec/dp/policy.shtml>).

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<sup>1</sup> But NB if the person appointed to the post is a migrant sponsored under the UK's points-based migration system, we are required to retain the applications of all shortlisted candidates for the duration of the sponsorship or for one year, whichever is the shorter.

## ANNEXE

### PAY SCALE FOR UNIVERSITY LECTURERS WITH TUTORIAL FELLOWSHIPS

(with effect from 1 August 2010)

<b>Main Lecturer Grade (10a)</b>				
Scale point	National Pay spine	University Salary	College Salary	Total Salary
11	52	£48,167	£9,264	£57,431
10	51	£46,764	£8,994	£55,758
9	50	£45,401	£8,732	£54,133
8	49	£44,079	£8,477	£52,556
7	48	£42,795	£8,230	£51,025
6	47	£41,548	£7,991	£49,539
5	46	£40,338	£7,758	£48,096
4	45	£39,164	£7,532	£46,696
3	44	£38,023	£7,313	£45,336
2	43	£36,916	£7,100	£44,016
1	42	£35,840	£6,893	£42,733