Job Related Information

This document includes information about the role for which you are applying and the information you will need to provide with your application.

1. Role Details

<table>
<thead>
<tr>
<th><strong>Vacancy reference</strong></th>
<th>15821</th>
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<tbody>
<tr>
<td><strong>Job title:</strong></td>
<td>Lecturer in Applied Mathematics</td>
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<td><strong>Reports to:</strong></td>
<td>Head of School, Mathematics and Statistics</td>
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<tr>
<td><strong>Salary:</strong></td>
<td>£40,792 - £48,677 depending on qualifications and experience</td>
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<td><strong>Terms and conditions:</strong></td>
<td>Academic</td>
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<tr>
<td><strong>Grade</strong></td>
<td>AC3</td>
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<tr>
<td><strong>Duration of post:</strong></td>
<td>Permanent</td>
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| **Working hours:**    | Full time 37 hours per week  
Reduced hours may be considered |
| **Location:**         | Walton Hall, Milton Keynes |
| **Closing date:**     | 12 noon 18/04/2019 |
| **Type of application form accepted:** | Short Application form with CV |
| **Number of referees required:** | 3 |
| **Unit recruitment contact:** | Resourcing Assistant, email resourcing-hub@open.ac.uk |
2. Summary of duties

The School of Mathematics and Statistics is a thriving community of teachers and researchers, known for its innovative development and presentation of teaching materials that can be flexibly studied by students at a distance, taking advantage of the new opportunities afforded by recent advances in technology.

Our courses are taught through distance learning and the successful candidate will contribute to developing and delivering teaching materials for our applied curriculum. The teaching materials are primarily written texts, which increasingly also make use of online technologies, such as online quizzes and short videos, to enhance the learning experience. It is crucial that the module texts express mathematical ideas and concepts clearly, and care and attention to detail in written work is essential. Deadlines for teaching materials can often be tight and inflexible, and it is important that teaching materials are delivered on time and are of a high quality. Teaching at the Open University is collaborative and team-based, and the ability to work successfully as part of a team is an essential part of the job. The team-based approach to teaching allows excellent support for the training and induction of new staff into the Open University teaching process.

The successful candidate will be based at the main Open University campus in Milton Keynes.

They will be expected to contribute to the research of the Applied Group: consideration will be given to any area of research in Applied Mathematics or Theoretical Physics. The successful candidate will be expected to be involved in the Applied Group’s research and scholarship activities and supervise PhD students. They will also be expected to aim to contribute to future REF submissions and explore external funding opportunities.

In addition, the successful candidate will be expected to undertake administrative roles as required, such as those associated with presenting a module, membership of exam boards, and interviewing PhD students.

3. Person specification

Requirements  (E = Essential/ D = Desirable)

<table>
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<tr>
<th>Education, qualifications and training</th>
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<tr>
<td>• Essential: PhD, or equivalent, in an area of applied mathematics, theoretical physics, or another related discipline</td>
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<th>Knowledge, work and other relevant experience</th>
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<tr>
<td>Essential:</td>
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<tr>
<td>• Ability to contribute to high-quality distance learning teaching materials across the applied mathematics curriculum</td>
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<tr>
<td>• Ability to develop original and independent research in applied mathematics or theoretical physics. Preference may be given to candidates whose interests strengthen or augment our existing research areas, however exceptional candidates with other research interests will also be considered.</td>
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<tr>
<td>• A proven track record of research in a relevant discipline, demonstrated by high-quality publications and indicating potential for future excellence.</td>
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Desirable:
• Teaching experience
• Successful supervision of postgraduate students
• Evidence of ability to obtain external research/scholarship funding
• Experience of interacting with the wider applied mathematics or theoretical physics community
• Experience of curriculum development and knowledge of a broad range of mathematical topics
• Appreciation of the particular needs of part-time distance learning students

Personal abilities and qualities

Essential:
• Excellent communication skills, both oral and written
• Ability to work successfully in a team, including the ability to offer and receive constructive criticism
• Ability to plan and organise work to agreed deadlines
• Willingness to contribute to the life of the School beyond the core teaching and research activities

Desirable:
• Enthusiasm for supporting higher education distance learning and for the application of new technologies to teaching and supporting students

4. Role specific requirements e.g. Shift working

N/A

5. About the unit/department

Faculty of Science, Technology, Engineering & Mathematics
The Faculty of Science, Technology, Engineering and Mathematics (STEM) comprises:

• School of Computing & Communications
• School of Environment, Earth & Ecosystem Sciences
• School of Engineering & Innovation
• School of Life, Health & Chemical Sciences
• School of Mathematics & Statistics
• School of Physical Sciences
• Knowledge Media Institute
• Deanery

“We aspire to be world leaders in inclusive, innovative and high impact STEM teaching and research, equipping learners, employers and society with the capabilities to meet tomorrow’s challenges”

We provide STEM higher education at a scale and reach unsurpassed in the UK, with a sizeable international reach. The Faculty of STEM consists of 700 staff and 1,800 Associate Lecturers. The Faculty delivers over 185 modules across undergraduate and postgraduate curriculum, supporting more than 20,000 students (full time equivalents) which is 29% of the OU total.

The Faculty generates more research income (circa £20M) than any other Faculty in the University, supported by a comprehensive laboratory infrastructure.
School of Mathematics and Statistics

The School is the largest UK provider of higher education mathematics and statistics teaching, with well over 15,000 student registrations each year. Our courses cover both undergraduate and postgraduate curriculum which is taught both inside and outside the UK. The School’s research and teaching covers a broad range of topics in mathematical sciences, across Applied Mathematics, Mathematics Education, Pure Mathematics, Statistics and Theoretical Physics.

Within the School there is a vibrant research environment, with about 50 academic members of staff together with postdoctoral researchers and PhD students. Our staff include two LMS Whitehead Prize winners, an IoP Maxwell Medallist, a Fellow of the American Statistical Association and a Fellow of the Institute of Mathematical Statistics, and our emeritus staff include an AMS Whiteman Prize winner and a RSS Bradford Hill Medallist. In the 2014 Research Excellence Framework, 75% of our research outputs were rated as world leading or internationally excellent.

The School provides a friendly, flexible and inclusive working environment and is actively striving to achieve gender equality in terms of opportunity and success for all, both within the School and for our students. The School holds an Athena SWAN bronze award and is currently working towards a silver award. Further information about the School of Mathematics and Statistics is available at http://www.mathematics.open.ac.uk/.

Applied Mathematics Group research

Research in the Applied Mathematics Group is predominantly in the area of theoretical or mathematical physics although there are other active areas including mathematical biology, inverse problems, optimisation and the mathematics of energy systems. In addition to the permanent members of staff, we currently employ two EPSRC postdoctoral researchers and a healthy number of PhD students.

**Uwe Grimm** works on aperiodic order and quasicrystals. His recent work has centred on properties of aperiodic systems, in particular the characterisation of the diffraction patterns of aperiodic structures. He also has a strong publication record in statistical mechanics, including work on applications in biology.

**Robert Hasson** contributes to the theory of inverse problems in general, and he is particularly interested in their application to magneto encephalography.

**Tim Lowe** is interested in the use of computer-based systems to support and enhance the learning of mathematics. He has a background as an applied mathematician, with interests in fluid mechanics, geometric modelling, optimization and numerical methods.

**Ben Mestel** has contributed to the theory of low-dimensional dynamical systems, with an emphasis on the use of renormalisation-group methods. Applications include investigations of Harper’s equation, a model for an electron in a quasiperiodic potential, which has remarkable criticality properties. He is also applying his expertise to modelling energy supply networks.

**Marc Pradas** has research interests which cover a wide range of topics on the interface of applied mathematics, statistical physics, and engineering science. He is particularly interested in soft condensed matter theory and fluid dynamics, including multiphase flows, microfluidics, and hydrodynamic instabilities; additionally stochastic processes and emergent collective phenomena in complex and biological dynamical systems.

**Katrine Rogers** researches in mathematical and numerical modelling, including optimisation, within a range of applications. She is currently working on optimising superoscillations for optical imaging which could, in
principle, remove all limits on the achievable resolution of optical images. Her previous work has included applications in structural engineering and astrophysics.

Andrey Umerski’s research is focussed on magnetic properties of matter and electronic transport phenomena, particularly spintronics. His work on spintronics focuses on both, fundamental aspects of spin and charge transport in magnetic nanostructures, and real-world applications in novel electronic devices. His pioneering work on tunnelling magnetoresistance lead to a new design of read-head currently employed in all commercially manufactured hard disk drives.

Paul Upton’s research is on statistical physics and quantum field theory with applications to phase transitions and critical phenomena, interfacial and surface phenomena, thermodynamic Casimir effect, wetting transitions, correlations in lattice gauge theories and mass spectra in confining gauge theories. He is also interested in applying nonlinear dynamics and stochastic methods to models of neurons, including applications to pitch and rhythm perception.

Michael Wilkinson is a theoretical physicist with wide-ranging interests. He contributes to statistical, solid-state and quantum physics and dynamical systems. Current topics include shape statistics of dynamical fractals and quantitative understanding of rainfall.

Applied Mathematics Group teaching

Students take our applied mathematics courses for many reasons: intrinsic interest, career progression, or to support their studies in other areas of mathematics, computing, science or other disciplines. The main teaching activity of Open University academics consists of working in teams to write courses and the associated assessment materials although there is scope for face-to-face teaching. The School is proud of the innovative nature of its courses and is constantly striving to be at the forefront of new developments in the teaching of mathematics.

The Applied Mathematics Group is directly responsible for several undergraduate modules, some of which support curriculum of other faculties (in physical sciences, engineering and economics):

MST210 Mathematical Methods, Models and Modelling: 60 credits;
MST224 Mathematical Methods: 30 credits;
MST326 Mathematical Methods and Fluid Mechanics: 30 credits;
MS327 Deterministic and Stochastic Dynamics: 30 credits;
M373 Optimisation: 30 credits;

In addition, the applied maths group shares responsibility for the school’s introductory modules, MU123 Discovering Maths, MST124 and MST125 Essential Mathematics 1 and 2 with a total of approximately 10,000 students per year. These are the courses on which students wishing to study mathematics, statistics and other disciplines, usually start their Open University studies and they are of major importance to the University.

All these undergraduate modules form optional or compulsory components of the BSc degrees in Mathematics, Mathematics and Statistics, Mathematical and Physics, Mathematics and its Learning, Economics and Mathematical Sciences, Data Science, Computing and IT with a second subject (mathematics), and a new qualification in Data Science.

The Applied Mathematics Group also contributes towards the school’s highly successful MSc in Mathematics programme. This currently has about 500 part-time students, accounting for almost 35% of the entire (FTE) UK MSc Mathematics provision. Our contribution includes courses on the calculus of variations, nonlinear ordinary
differential equations, applied complex variables, advanced mathematical methods with Maple, and a variety of dissertation topics.

Further details of these degrees and courses are available from the University’s website at:

http://www3.open.ac.uk/courses

(choose Mathematics and Statistics, and then Modules).

6. How to obtain more information about the role or application process

If you would like to discuss the particulars of this role before making an application please contact the Head of School, Dr Andrey Umerski, on +44(0)1908 652710 or email: andrey.umerski@open.ac.uk.

If you have any questions regarding the application process please contact Resourcing Hub on +44(0)1908 55544 or email: Resourcing-Hub@open.ac.uk.

7. The application process and where to send completed applications

Your application should contain:

(1) an application form completed in full;

(2) an up to date curriculum vitae that includes details of relevant teaching and research experience, courses taught, research students supervised, grants received, publications, and professional activities. Please remove any information from your CV that might give an indication of your race, religion or belief, or sexual orientation, as these details are irrelevant to your application. You should include your current salary details;

(3) a letter (maximum 1250 words) explaining how your experience and skills match the person specification.

Please ensure that your application reaches the University by: 12 noon 18/04/2019

E-mail your application to: Resourcing-Hub@open.ac.uk

8. Selection process and date of interview

The interview panel will be chaired by: The Executive Dean or one of the Associate Deans

The other members of the interview panel will be: Dr Andrey Umerski, Head of School, School of Mathematics and Statistics

Others to be confirmed
<table>
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<tr>
<th>The interviews will take place on:</th>
<th>To be confirmed</th>
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<tr>
<td>The selection process for this post will include</td>
<td>As part of the final selection process shortlisted candidates will be invited to give a presentation on their research, including an outline of their plans for future research. Candidates will also be asked to produce a piece of teaching material and attend an individual interview. The decision on the appointment rests solely with the Appointing Committee. Members of the panel will be notified to shortlisted candidates.</td>
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We will let you know as soon as possible after the closing date whether you have been shortlisted for interview. Further details on the selection process will also be sent to shortlisted candidates.

Applications received after the closing date will not be accepted.