

Lecturer/Senior Lecturer in Mathematical Finance & Statistics

Further Particulars

1. The College

Imperial College London consistently achieves one of the highest rankings nationally and internationally, as listed in the Times Higher QS World University Rankings 2011-2012.

The Rector and President, Sir Keith O’Nions FRS, is the College’s academic head and chief executive officer. The Chairman of the Court and Council is Baroness Eliza Manningham-Buller.

The Mission

Imperial College embodies and delivers world class scholarship, education and research in science, engineering and medicine, with particular regard to their application in industry, commerce and healthcare. We foster interdisciplinary working within the College, and collaborate widely externally.

Strategic Intent

The College’s vision and intent is to:

Continue to be a world-leading institution for scientific research and education,

To harness the quality, breadth and depth of our research capabilities to address the difficult challenges of today and the future,

To develop the next generation of researchers, scientists and academics,

To provide an education for students from around the world that equips them with the knowledge and skills they require to pursue their ambitions,

To make a demonstrable economic and social impact through the translation of our work into practice worldwide,

To engage with the world and communicate the importance and benefits of science to society.

Formation and History

Imperial College was established in 1907 in London’s scientific and cultural heartland in South Kensington, as a merger of the Royal College of Science, the City and Guilds College and the Royal School of Mines. St Mary’s Hospital Medical School and the National Heart and Lung Institute merged with the College in 1988 and 1995 respectively.

Charing Cross and Westminster Medical School and the Royal Postgraduate Medical School merged with the College on 1 August 1997 to form, with the existing departments on the St Mary’s and Royal Brompton campuses, the Faculty of Medicine.

The Kennedy Institute of Rheumatology joined the Faculty of Medicine in 2000 and for over a decade was unique in Europe for its integration of basic science research and clinical facilities in rheumatology. On 1 August 2011, the Institute moved to Oxford University to build a new centre for research into rheumatology and inflammatory and autoimmune disease.

In 2007, the Imperial College Healthcare NHS Trust, was formed by merging Hammersmith and St Mary's Hospitals' NHS Trusts with the College, forming the country's largest NHS Trust. This also established the UK's first Academic Health Science Centre (AHSC) bringing together healthcare services, teaching and research for maximum synergistic benefits.

Imperial College was an independent constituent part of the University of London until July 2007, when it was granted a new royal charter declaring it an independent university in its own right.

The academic structure of Imperial College is divided into three faculties, the Faculties of Engineering, Natural Sciences and Medicine. The College's other major academic unit is the Business School.

Staff and Students

The academic and research staff of 3,397 includes 73 Fellows of the Royal Society, 77 Fellows of the Royal Academy of Engineering, 81 Fellows of the Academy of Medical Sciences, one Fellow of the British Academy, four Crafoord Prize winners and two Fields Medalists. Fourteen Nobel Laureates have been members of the College either as staff or students.

The College has 14,927 students, of whom 39 percent are postgraduate. Thirty per cent of students come from outside the European Union. External assessment of the College's teaching quality in many different subject areas has been judged to be of high standard. The proportion of women students has increased to 36 percent of the total.

Research

The quality of the College's research has been judged consistently to be of the highest international standard and the proportion of income from research grants and contracts is one of the highest of any UK university.

The concentration and strength of research in science, engineering and medicine gives the College a unique and internationally distinctive research presence.

Generous support for the College's work comes from a wide variety of sources. From industry there are donations towards certain senior academic posts, advanced courses, bursaries and scholarships. The single largest contribution to the College from industrial concerns is in the form of contracts to carry out research. The College also gains considerable support from research councils and charities to undertake research.

Teaching and Learning

The College's overall educational aim is to ensure a stretching and exhilarating learning experience and, while maintaining its traditional emphasis on single honours degree courses, it also aims to give students the opportunity to broaden their experience through courses relevant to student and employer needs.

In its MSc. course provision, the College seeks to provide a wide range of specialist courses in areas in which it has particular expertise. Many of those offered by non-medical departments emphasise the valuable interaction between scientific/technological training and industrial experience, whilst those offered by the medical departments focus on subjects at the interface between basic science and medicine and on specialist education for doctors and other health professionals in training. In addition, the College's wide range of PhD programmes reflect its aim of pursuing research at the frontiers of scientific, engineering, management and medical knowledge and the increasingly interdisciplinary nature of this research.

The Centre for Educational Development raises and consolidates the profile of learning, teaching and educational development throughout the College. Newly-appointed non-clinical lecturers will be expected to develop and expand their teaching skills, and there are many learning and teaching activities for more experienced staff.

On 1 October 2011, the Graduate School of Life Sciences and Medicine merged with the Graduate School of Engineering and Physical Sciences, to form a single entity. The merged Graduate School is the focus of postgraduate education and research and maintains, enhances and monitors quality, disseminates best practice, while initiating and developing new programmes, particularly those with an interdisciplinary slant. It also has quality assurance responsibilities for the two non-faculty departments of Humanities and the Business School.

The College's teaching quality is audited regularly, both internally and externally. Recent external audit found teaching quality to be of a high standard.

Location

The College now has one of the largest operational estates of any UK University. It includes six central London campuses, the main South Kensington campus, the Charring Cross campus, the Chelsea and Westminster campus, the Hammersmith campus, the Royal Brompton campus and St Mary's campus.

Silwood Park, a postgraduate campus at Ascot in Berkshire, houses the Ecology and Evolution Section of the Biology Division, in the Department of Life Sciences. The successful Master's courses in Crop Protection, Forest Protection and Ecology, Evolution and Conservation are run at Silwood together with the newly created Master's course in Conservation Science, and there is a thriving postgraduate community. The campus houses excellent research facilities and a wide range of natural environments. The NERC funded Centre for Population Biology is also based at Silwood, together with a Business Centre.

2. The Faculty of Natural Sciences

The Faculty of Natural Sciences is dedicated to delivering the highest possible quality teaching and research at the heart of Imperial College London and fosters excellence in a diverse and supportive community. The Faculty fully embraces teaching and research activities across the core scientific disciplines of Chemistry, Mathematics, Physics and Life Sciences. The Faculty also hosts the Centre for Environmental Policy, the Institute for Systems and Synthetic Biology, the Centre for Plastic Electronics and the Institute of Chemical Biology.

The Faculty's academics enjoy the highest standing and the research volume, the quality of publications and the number of citations are enviable. The Faculty is committed to interdisciplinary and inter-Faculty activities and strives to provide the kind of environment where these collaborations can flourish. The Faculty benefits from national and international alliances and collaborations with industry and other institutions and organisations.

The Faculty is committed to continuing to attract and develop the highest quality students and staff for its successful undergraduate and postgraduate courses.

The Faculty is led by the Principal, Professor Maggie Dallman, and employs over 1,200 staff, teaches 2,896 undergraduates and 1,465 postgraduate students and has a research income totalling £66 million (2010-11 figures).

Further information about the Faculty's structure and activities can be found on its web site: <http://www3.imperial.ac.uk/naturalsciences>

3. The Department of Mathematics

The Department of Mathematics at Imperial College London is one of the largest in the UK, with 850 undergraduates undertaking a broad range of BSc and MSci courses, 111 MSc students and 170 PhD students. The teaching staff comprises 81 academic staff (including 39 Professors), some 50 Research Associates/Fellows, and a steady flow of international visitors. In addition, the Department is fortunate in having a number of eminent Emeritus Professors and Senior Research Fellows who play a continuing role in the research life of the Department.

Academic staff within the department hold many prestigious prizes and awards. Please see <http://www3.imperial.ac.uk/mathematics/about/prizesandawards> for further information.

The principal aim of the Department is to train professional mathematicians and statisticians to pursue the study of scientific and technological problems by mathematical methods, and to undertake research in various branches of the subject. A further important function is to provide instruction in Mathematics for students who require it as ancillary to courses of study in other departments of the college. Substantial computing power is available to faculty and postgraduates and all members of the Faculty can expect an up-to-date computer in their office. The College has a responsive central IT advisory service, including a telephone helpline.

The Department's undergraduate teaching programme incorporates a number of three and four year Mathematics degrees, as well as the Mathematics part of three joint degrees in Mathematics and other disciplines. Externally, the Department is responsible for the ancillary teaching of Mathematics and Statistics to the other departments of the College.

There is currently a great demand, both in research and in industry, for well-trained, highly qualified mathematicians and statisticians. To meet this demand, the Mathematics Department is offering three one-year MSc courses, in Applied Mathematics, Pure Mathematics, and Mathematics and Finance. Full details can be found at <http://www.ic.ac.uk/P3616.htm>. We also host an extensive PhD programme (around 125 students).

The Department acts as a unified whole in most respects, but for administrative convenience is organised into Sections with distinctive research directions: Pure Mathematics, Applied Mathematics and Mathematical Physics (this Section includes Numerical Analysis), Statistics and Mathematical Finance.

Applied Mathematics and Mathematical Physics

In the 2008 Research Assessment Exercise the AMMP Section came joint 7th in the UK, with a high percentage of research deemed to be internationally excellent in terms of

originality, significance and rigour.

Research in this Section is loosely organized into a number of overlapping research groups: Biomathematics, Dynamical systems, Fluid Dynamics, Integrable Systems, Mathematical Physics, and Numerical/Applied Analysis and Scientific Computing,

Currently the Section has approximately thirty full time staff members whose interests cover virtually all areas of applicable Mathematics; on many of these topics there are close links, overlap and collaborations with the other Sections of the Mathematics department (the other Sections are Pure Mathematics, Statistics and Mathematical Finance), other departments within the College and elsewhere. There are many postgraduate students and postdoctoral researchers, with academic visitors passing through regularly, which makes for a lively and dynamic research environment.

Within the Section there are numerous regular seminar series including, the Applied Mathematics Colloquium, Biomathematics Seminar, Dynamical Systems Seminar, Fluid Dynamics Seminar, Applied Analysis Seminar, Integrable Systems Seminar. In addition there are several focused working research groups, postgraduate talks as well as specialist graduate lecture courses. Formal courses include the Applied Mathematics MSc and a lectures from the Taught Course Centre (TCC) and London Taught Course Centre (LTCC). Further details of the AMMP Section, the research groupings, seminars and individual staff interests can be found at <http://www3.imperial.ac.uk/ammp>

Mathematical Finance

The Mathematical Finance Section is the largest of its kind in the world, with a strong reputation for the breadth and quality of its research in the mathematics of financial markets. Active areas of research include: stochastic processes and stochastic analysis, systemic risk, credit risk, counterparty risk, modelling and pricing of derivatives instruments, interest rate modelling, algorithmic trading and optimal execution problems, liquidity modeling and quantitative risk management.

The staff include: Professor Rama Cont (Chair and Head of Section), Professor Damiano Brigo (co-Head of Section), Dr Martijn R. Pistorius (Programme Director, MSc in Mathematics and Finance), Dr Harry Zheng, Dr Thomas Cass, Dr Jean-Francois Chassagneux and Dr Antoine Jacquier and senior Research Investigators Mark Davis and Nick Bingham. Visiting Professors include Dr Richard Martin (Apollo Asset Management), Dr Dirk Tasche (Bank of England) Dr Alexander Lipton (Merrill Lynch) and Dr Andrea Pallavicini (Banca IMI).

The Mathematical Finance Section offers postgraduate courses in mathematical finance at MSc and PhD level. The [MSc in Mathematics and Finance](#) programme, combines graduate-level instruction in the mathematics of financial markets with summer projects in collaboration with banks, hedge funds, agencies, and systems providers in the finance industry. The PhD programme, with 29 PhD students at present, funded by a range of academic and industry sources, is part of the London Graduate School in Mathematical Finance, offering a variety of PhD-level courses every year across institutions.

The Mathematical Finance Section has recently launched the *CFM-Imperial Institute of Quantitative Finance*, a research institute destined to promote and disseminate novel research projects on mathematical modelling of risk in financial markets.

Further details of the Mathematical Finance Section and its activities are available at: <http://www.imperial.ac.uk/mathfin>

Pure Mathematics

In the 2008 Research Assessment Exercise (RAE) Pure Mathematics was rated top in the UK with the highest percentage of world-leading and internationally-excellent research ratings.

Over the past ten years, twelve new permanent appointments have been made in the Pure Mathematics Section, including those of Simon Donaldson FRS, Ari Laptev, Michael Ruzhansky, Kevin Buzzard, Alexei Skorobogatov and Alessio Corti. There are currently about 30 PhD students and 12 postdoctoral researchers in Pure Mathematics.

Research areas include Geometry (in a broad sense, encompassing differential and algebraic geometry, symplectic topology, geometric aspects of mathematical physics and PDE), Number theory and algebraic geometry (particularly elliptic curves and modular forms, Diophantine equations and arithmetic algebraic geometry), Algebra (particularly finite and algebraic groups, probabilistic and asymptotic group theory, representation theory and algebraic combinatorics), Analysis and probability (analysis and potential theory on Riemannian manifolds, graphs and other spaces, analysis of infinite dimensional spaces, Markov semigroups and statistical mechanics), Stochastic analysis and mathematical finance (stochastic differential equations, non-linear filtering and applications to mathematical finance). For more details of the staff and research interests in the Pure Mathematics Sections see our website <http://www3.imperial.ac.uk/puremaths>.

Statistics

In the 2008 Research Assessment Exercise the Statistics Section came joint third in the UK, in terms of world-leading and internationally-excellent research. Details of research interests can be seen at <http://www3.imperial.ac.uk/statistics/research>.

The Statistics Section currently has three Professors (Alastair Young, David van Dyk, and Andrew Walden), two Senior Research Investigators (Professors David Hand FBA OBE and Henry Wynn), one Honorary Principal Research Fellow (Professor Martin Crowder), one Reader (Niall Adams), three Senior Lecturers (Axel Gandy, Nick Heard and Emma McCoy), eight Lecturers (Christoforos Anagnostopoulos, Tony Bellotti, Leonardo Bottolo, Ben Calderhead, Ed Cohen, Nikolas Kantas, Daniel Mortlock and Almut Veraart), as well as two sessional lecturers (Rodney Coleman and Lynda White), and several postdoctoral and teaching fellows. Visiting Professorships within the Statistics Section are held by Paul Allin, Raj Bhansali, Agnes Herzberg and Sir Adrian Smith FRS.

There are currently about thirty research students in Statistics and a vibrant MSc programme (for details of the latter, see <http://www3.imperial.ac.uk/statistics/msc>). There is a regular flow of visiting academic staff from around the globe. The Section has an established international reputation for its methodological work in Bayesian analysis and computation, classification, data mining, 'big data', hierarchical generalised linear models, reliability and survival analysis, statistical signal processing, and for its applied work in retail finance and biostatistics. In recent years it has built an increasing reputation for its work in statistical genetics, genomics and bioinformatics, as well as in astrostatistics, statistical theory and applied probability. Significant research funding is contributed by industrial sponsors, as well as by the research councils. Full further details of the Section and its activities are available on our website at: <http://www3.imperial.ac.uk/statistics>

4. The Post

Job Title:	Lecturer/ Senior Lecturer in Statistics & Mathematical Finance
Department:	Mathematics
Grade:	Academic and Research Job Family, Level C/D
Responsible to:	Head of Department of Mathematics

JOB DESCRIPTION

Research Duties

- To undertake a self-directed program of research and scholarship at a level commensurate with the current standards of excellence in the section.
- To submit publications regularly to refereed journals.
- To generate grant income as appropriate.
- To play a leading role in the Statistics and Quantitative Finance community, in the College, nationally and worldwide.
- To develop collaborative projects within the department, the College and elsewhere.
- To promote the reputation of the Statistics and Mathematical Finance Sections, the Department, and the College, through scientific meetings and other activities.

External Activities

- Act as external examiner for postgraduate students.
- Act as external assessor for other universities.
- Undertake creative and scholarly work which has a significant impact.
- Represent the Department, the College and the disciplines of Statistics and Mathematical Finance externally.

Teaching Duties

- Teaching students at undergraduate level: this will be a mix of lecturing, academic tutoring, classwork demonstrating and personal tutoring, on courses agreed with the Heads of Section.
- Teaching in the *MSc in Statistics* and *MSc in Mathematics & Finance* programmes.
- Undergraduate and MSc project supervision.
- Research and PhD postgraduate student supervision and teaching.
- Curriculum development work.
- To be responsible for managing and developing staff such as Research Associates.
- To contribute to the assurance and enhancement of the quality of teaching and learning and research within the Department, in line with College standards.

Administration/Management

- Make a significant contribution to the running of the Department, through leadership of committees, leading development activity or research assessment or admissions.
- To attend relevant academic or management committees.

- Develop and manage staff and resources in support of major research and teaching activities.

In leadership, management and supervisory roles, new members of staff will be required to familiarise themselves with **Imperial's Expectations**, which will help them fulfill their role at the College. More information can be found at the following web page: <http://www3.imperial.ac.uk/hr/procedures/support>.

Other Duties

- To observe and comply with all College policies and regulations, including the key policies and procedures on Confidentiality, Conflict of Interest, Data Protection, Equal Opportunities, Ethics related, External Interests, Financial Regulations, Health and Safety, Imperial Expectations (for new leaders, managers and supervisors), Information Technology, and Smoking.
- To undertake any necessary training and/or development.
- To undertake specific safety responsibilities relevant to individual roles, as set out on the College Health and Safety Structure and Responsibilities webpage: <http://www3.imperial.ac.uk/safety/policies/organisationandarrangements>.

Job descriptions cannot be exhaustive and the postholder may be required to undertake other duties, which are broadly in line with the above key responsibilities.

Imperial College London is committed to equality and valuing diversity.

PERSON SPECIFICATION

Job Title:	Lecturer or Senior Lecturer in Mathematical Finance & Statistics
Department:	Mathematics
Grade:	Academic and Research Job Family, Level C/D
Responsible to:	Head of Department of Mathematics

Imperial Expectations

These are the 7 principles that Imperial leaders, managers and supervisors are expected to follow:

- 1) Champion a positive approach to change and opportunity
- 2) Communicate regularly and effectively within, and across, teams
- 3) Consider the thoughts and expectations of others
- 4) Deliver positive outcomes
- 5) Encourage inclusive participation and eliminate discrimination
- 6) Support and develop staff to optimise talent
- 7) Work in a planned and managed way

Qualifications

- A PhD (or equivalent) in Statistics, Mathematical Finance, Mathematics or a closely related discipline.

Depending on teaching experience, the successful applicant may also be required to complete all or part of the Faculty of Natural Sciences' Learning and Teaching Development Programme. It is expected that the programme would normally be completed within 1-2 years following appointment.

Knowledge / Experience

Candidates will be expected to demonstrate the following:

- Research interests in the field of statistical modelling of financial data but those with proven ability in related areas in mathematics and statistics will also be considered.
- An excellent record of research achievement of international standing.
- Experience of teaching mathematics or statistics at undergraduate and postgraduate levels.

Skills and Abilities

- Proven ability to conduct a personal research programme, and to attract research funding
- Proven evidence of independent research activity.
- Ability to develop and apply new concepts.
- Creative approach to problem-solving.
- Excellent verbal communication skills particularly with researchers in non-mathematical disciplines.
- The ability to deal with a wide range of people and to explain statistical and mathematical ideas to non-specialists.
- Excellent written communication skills and the ability to write clearly and succinctly for

- publication.
- Ability to organise own work with minimal supervision.
 - Ability to prioritise own work in response to deadlines.
 - Advanced computer skills, including word-processing, Internet, and programming.
 - Ability to direct the work of a small research team and motivate others to produce a high standard of work.
 - Ability to maintain confidentiality.
 - Ability to work as part of a team.
 - Ability to provide leadership

Personal Attributes

- Flexible attitude towards work and the ability to work in multi-disciplinary teams.
- Willingness to undertake any necessary training.

For appointment to the position of Senior Lecturer, in addition to the above, evidence of the following will also be required:

- An exceptionally strong research record in field of Quantitative Finance, Statistics or a closely related subject
- A demonstrable track record of successful postgraduate student supervision.

5. Salary and Conditions of Service

A full set of terms and conditions will be given to the successful candidate, together with the College's most important policies which affect staff. The principal terms and conditions are as follow:

Lecturers

The Minimum salary for a Lecturer is £45,040 (effective from 1 August 2013 until further notice, for London and Silwood Park). The post will be graded at Level C in the Academic and Research Job Family. An incremental scale is in operation and the increment date is 1 October each year, up to a current maximum of £50,190.

Senior Lecturer

The minimum salary for a Senior Lecturer is £55,340 (effective from 1 August 2013 until further notice, for London and Silwood Park). The post will be graded at Level D in the Academic and Research Job Family. Enhancements to pay will be based on individual performance. Annual cost of living increases will be determined by Imperial College through its local collective bargaining machinery.

Conditions of service – Lecturers/Senior Lecturers

Salaries are payable on the 24th day of each month (the exception being December) by transfer to a bank or building society account. Deductions in respect of income tax and National Insurance contributions will be made from salaries at the statutory rates.

Academic staff normally take annual leave during College vacations and by arrangement with the Head of Department in the light of academic and departmental requirements. Annual leave entitlement is 39 days for full time staff (pro rata entitlement for part time staff). This is inclusive of 8 days for Public holidays and a total of six days each year when the College is closed over Easter and Christmas.

In some years, because of the day of the week on which Christmas day falls, a decision may be made to increase the College closure to seven days. In these circumstances the annual leave entitlement will be increased to 40 days for full-time staff (again pro-rata for part-time staff).

At the beginning of the leave year staff will be required to allocate the appropriate number of days of their mandatory leave entitlement to cover the College Closure days and Public holidays that fall within that leave year. For part-time staff the allocation should cover their normal working days that fall upon a College closure day, bank or public holiday during that leave year.

The College Closure days and Public Holidays are listed on the HR website.

The occupational pension scheme is the Universities Superannuation Scheme (USS). Staff who are already members of the Federated Superannuation System for Universities (FSSU) or the National Health Service Superannuation Scheme (NHSPS) may, if they are still eligible, retain their membership in these schemes.

Unless stated otherwise in the offer of employment, or agreed by the head of department, the appointment may be terminated by either side by giving a minimum of three months' notice in writing. The last day of service should fall on one of the following dates: 31 December; 31 March; 30 June or 30 September or at the end of a term by agreement with the Head of Department.

All appointments have a probationary period of six months, or, in the case of non-clinical Lecturers and clinical Senior Lecturers, a training and development review period, which lasts 3 years for non-clinical Lecturers, and 5 years for clinical Senior Lecturers.

Staff on a fixed term contract receive notice of the ending of their employment within that contract. No further contractual notice will be given unless the contract is to terminate prior to the end date specified in the offer of employment. In these circumstances the notice from the College would be as above.

6. Applications

Applications should be made by submitting the completed [Lecturer and Senior Lecturer \(Clinical and Non-Clinical\)](#) and [Recruitment monitoring form](#), along with any other relevant supporting documents such as your full CV, via email to Ms Angela Kehoe, Senior HR Manager, Telephone: 00 44 (0) 20 7594 5653, e-mail: a.kehoe@imperial.ac.uk, quoting reference number NS2014014SC.

The CV should include the following information:

- a) Applicant's full name, private address and private telephone number
- b) A confidential e-mail address, where possible
- c) Degrees (including University and dates)
- d) Past and present posts
- e) List of publications (candidates should in addition to their complete list select their three most important publications and describe their involvement in these papers)
- f) Brief description of future research plans
- g) Information on research grants and contracts which have been obtained student supervision, etc.
- h) Names, addresses and, email, fax numbers, of three referees.

Closing date: 19 February 2014

All candidates will be contacted after the shortlisting process has been completed.