



UNIVERSITY OF
BIRMINGHAM

Closing date:
Job reference:



Lecturer / Senior Lecturer / Reader in Cyber Security

School of Computer Science

Job Summary

Due to expansion through internal and external funding, the Security and Privacy group in the School of Computer Science is seeking to appoint two new posts. One appointment will be made at Lecturer level, with the other being made at Lecturer, Senior Lecturer or Reader level. The postholders will be expected to contribute to a thriving research community in cyber security, and computer science more broadly, as well as teaching on our dedicated cyber security courses. The desired area of expertise is open but we are particularly interested in those specialising in systems security or the intersection of security with artificial intelligence or human-computer interaction.

Job Context

The Security and Privacy group currently consists of eleven academic staff researching all aspects of cyber security and privacy. We are recognised by EPSRC and NCSC as an Academic Centre of Excellence in Cyber Security Research and have a GCHQ-certified MSc in Cyber Security. Current areas of expertise within the group include: designing secure systems, formal analysis of systems, applied cryptography, automotive security, electronic voting, security testing, and developing attack methods and defences. The research ethos of the group is to tackle problems that are important to society, government and industry.



Lecturer / Senior Lecturer / Reader in Cyber Security

Role purpose

To create and disseminate knowledge through initiating and conducting international-quality original research, through publication and by seeking external funding, and through developing and delivering undergraduate and postgraduate programmes in computer security and computer science.

To contribute to the School's administration through management, leadership and enterprise activities, and assist in Applicant Visitor Days, Open Days and other School events.

Scope of the role

The post holder is expected to contribute to the whole range of research, teaching and administration (as appropriate to the level of appointment).

Research involves initiating, conducting and disseminating international quality original scholarship. The research should have measurable outcomes and be reflected in a growing international reputation. At Senior Lecturer and Reader level, research is likely to involve and established national and developing international reputation through a clear record of impact.

Teaching is likely to include a substantial contribution to: (a) the management, development (including programme/module review) and delivery of teaching and assessment; and (b) enhancement of the student experience or employability. The role will typically also involve developing and advising others, including: (a) providing expert advice to staff and students, (b) supervising and examining PhD students, and (c) developing and advising others on learning and teaching tasks and methods.

Management and administration is likely to involve contributions at School level, and/or making an important contribution to some managerial/leadership activities (e.g. working groups) within the University. This may include developing and making substantial contributions to knowledge transfer, enterprise, business engagement, public engagement, widening participation, schools outreach, or similar activities at School level or further within the University. At Senior Lecturer and Reader level there is likely to be a sustained high value high impact contribution at University level.



Lecturer / Senior Lecturer / Reader in Cyber Security

Main responsibilities (research)

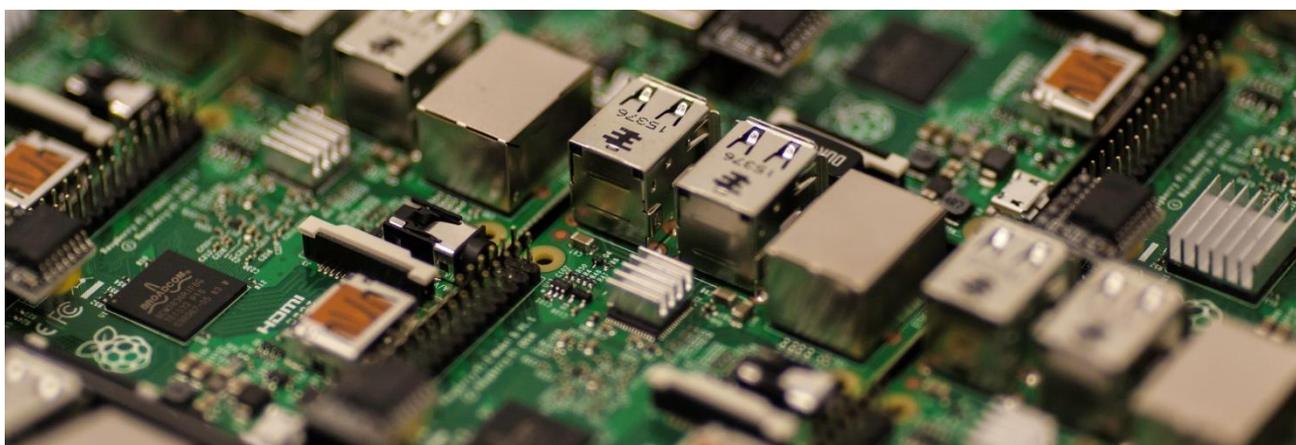
Postholders at all levels will be expected to plan and carry out international-quality research, using appropriate methodology and techniques. This may include contributing to some or all of the following:

- Supervise and examine PhD students, both within the institution and externally
- Manage research activities and/or supervise other research staff
- Develop novel methodologies and techniques appropriate to the type of research being pursued
- Pursue personal research including developing research ideas and winning support, including financial support.
- Plan, publish and/or execute high quality research
- Project-manage research activities, and/or supervise other research staff
- Present findings in high quality publications and conference proceedings
- Provide expert advice to staff and students within the discipline
- Apply knowledge in a way which develops new intellectual understanding
- Develop and make substantial contributions to knowledge transfer, and enterprise (including business engagement, public engagement) and similar activity that is of manifest benefit to the College and the University

Senior Lecturer / Reader

In addition, appointments at Senior Lecturer and Reader level will be expected to pursue sustained research activity through original research and scholarship, including other research-related contributions through conference papers and presentations and/or consultancy projects and advice. Where appropriate for the discipline, this may include some but not all of the responsibilities listed below:

- Make a major contribution to the management of research activities
- Lead successful funding bids which develop and sustain research support for the specialist area (in disciplines where this is possible)
- Publish leading research that results in a sustained, highly respected reputation of international quality in the subject area and/or designing and developing innovative underpinning technologies
- Provide expert advice internally and externally
- Provide leadership of research that contributes to the progression of the discipline (in disciplines where this is possible)
- Referee and peer review articles for peer reviewed academic journals and grant applications by research councils and/or other major funding bodies
- Lead sustained high value impact activity in knowledge transfer and enterprise (including business engagement, public engagement) that is of manifest benefit to the College and University, and:
a) makes a significant contribution to policy development at a national and international level;
and/or b) involves development of industrial links and comparable networks and initiatives.



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Main responsibilities (teaching and learning)

Postholders at all levels will be expected to contribute to some or all of the following:

- Teach and examine courses at a range of levels
- Plan and review own teaching approaches and act as a mentor to encourage others to do the same
- Develop degree programme proposals and make substantial contributions to the design of teaching programmes more widely in the School, as appropriate
- Use appropriate approaches to learning and teaching in their field
- Disseminate appropriate practices through suitable media
- Develop and advise others on learning and teaching tasks and methods
- Undertake and develop the full range of responsibilities in relation to supervision, marking and examining
- Develop and make substantial contributions to knowledge transfer, enterprise, business engagement, public engagement activities or similar on own specialism that enhances the student experience or employability and is of manifest benefit to the College and University
- Devise and supervise projects, student dissertations and practical work

Senior Lecturer / Reader

In addition, appointments at Senior Lecturer and Reader level will be expected to contribute at a senior level on a sustained basis in learning and teaching. Where appropriate for the discipline, this may include some but not all of the responsibilities listed below:

- Lead the development of new and appropriate approaches to learning and teaching. This may be underpinned by research and evaluation of teaching methods and systems.
- Act as adviser for teaching and learning methods through excellent practice and mentoring other colleagues
- Lead the design and/or co-ordination of programmes or equivalent activities across the School
- Contribute to the development of teaching and learning policy, methods and standards, more widely than the School
- Contribute to debate nationally about policy, methods and practices through publications, conference activity and roles that advance quality in the discipline
- Lead the development and management of assessment strategies within the School/Department
- Lead substantial and sustained high value impact activity in knowledge transfer and enterprise (including business engagement, public engagement) that enhances the student experience and/or employability and is of manifest benefit to learning and teaching in the College and the University. This may include the development of industrial links and comparable networks and initiatives



Lecturer / Senior Lecturer / Reader in Cyber Security

Main responsibilities (management and administration)

Postholders at all levels will be expected to contribute to some or all of the following:

- Contribute to the administration/management of research and/or teaching across the Department/School
- Advise on personal development of staff and students
- Make a sustained contribution to widening participation, schools outreach and/or public understanding of the discipline
- Contribute to administrative activities within the University (e.g. appeals panels, working groups)
- Develop and manage staff and resources in support of major research and/or teaching activities

Senior Lecturer / Reader

In addition, appointments at Senior Lecturer and Reader level will be expected to chair and/or lead activities in the School and representation on University committees or working groups. Where appropriate to the discipline, this is likely to include some but not all of the responsibilities listed below.

- Make an important contribution to the development and running of the School, for example, leading activity on teaching assessment and/or on research
- Develop and manage staff and resources in support of major research and/or teaching activities
- Make important contributions to the development of the School's research strategy and/or learning and teaching strategy
- Lead/project manage a team to devise and implement a new and/or revised process (e.g. new programme or a recruitment drive)
- Contribute significantly to the development and delivery of knowledge transfer, enterprise, business engagement and public engagement activities with a sustained high value impact of manifest benefit to the College and the University



Lecturer / Senior Lecturer / Reader in Cyber Security

Person specification (Lecturer)

- Normally, a higher degree (usually PhD) in computer science, mathematics or a closely related field, or equivalent qualifications or experience
- Extensive research/teaching experience and scholarship within computer security
- Proven ability to devise, advise on and manage learning/ research
- Evidence of the ability to attract PhD students, to secure external grants from research councils, academic charities or industries, or to consult and work with industry is desirable. A demonstrated ability to balance long-term fundamental research with short-term applied projects would be beneficial

Research

- A growing international research record in computer science, evident from publications in leading international journals, is required, desirably with evidence of much impact.
- Experience and achievement reflected in a growing reputation
- Experience and demonstrated success in planning, undertaking and project managing research to deliver high quality results
- Extensive experience of applying and/or developing and devising successful models, techniques and methods
- Experience and achievement in knowledge transfer, enterprise and similar activity

Teaching and learning

- Ability to design, deliver, assess and revise teaching programmes
- Experience in developing appropriate approaches to learning and teaching, and advising colleagues
- Experience and success in knowledge transfer, enterprise and similar activity that enhances the student experience or employability

Management and Administration

- Ability to contribute to School/Departmental management processes
- Ability to assess and organise resources effectively
- Understanding of and ability to contribute to broader management/administration processes



Lecturer / Senior Lecturer / Reader in Cyber Security

Person specification (Senior Lecturer)

Demonstrated competence in Research; Learning and Teaching; and Management and Administration; and excellence in at least two of these areas.

- Normally, a higher degree (usually PhD) in computer science, mathematics or a closely related field, or equivalent qualifications or experience
- Extensive research/teaching experience and scholarship within computer security
- Proven ability to devise, advise on and manage learning/ research
- Evidence of the ability to attract PhD students, to secure external grants from research councils, academic charities or industries, or to consult and work with industry is desirable. A demonstrated ability to balance long-term fundamental research with short-term applied projects would be beneficial.

Research

- High level peer esteem as evidenced by:
- Excellent reputation in the UK and often internationally, reflected in sustained high quality output, level of innovation, impact on subject and recognition
- An excellent and sustained record of peer reviewed research publications
- Successful and sustained supervision of doctoral students to completion
- Substantial and sustained research income generation, e.g. through research grants, contracts, research consultancy or other external funding
- Sustained high value impact knowledge transfer and enterprise that is of manifest benefit to the College and University

Teaching and learning

- High national reputation for the development of teaching and learning excellence within the discipline
- Successful and sustained use of a range of appropriate teaching methods, and assessment strategies that promote high quality learning, including learning that is flexible, distinctive and current and stimulates learners' natural curiosity
- Significant and sustained contribution to one or more of the following: strategic development of new programmes; approaches to learning; the development of learning resources
- High quality and sustained contributions to fostering excellence in teaching activities more widely, i.e. in the Department/School or College and/or externally
- Track record of substantial and sustained high value impact on the enhancement of the student experience, and/or employability
- Mentoring and expert advice which develops the skills of colleagues in teaching and in fostering learning

Management and administration

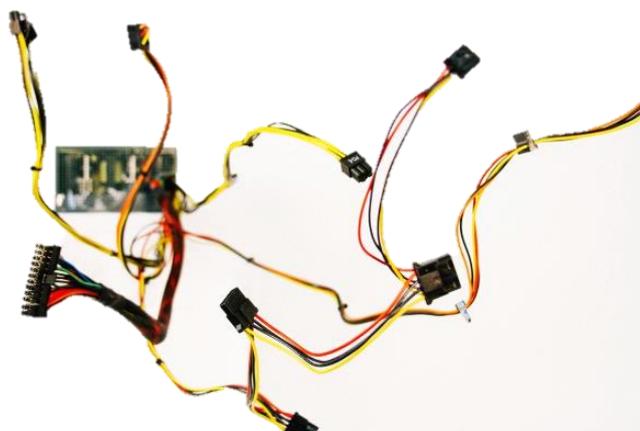
- Successful and sustained performance in significant administrative/managerial role(s)
- Significant and sustained high quality innovative contributions to the management/administration of the Department/School/College or University
- Successful and sustained contribution to the corporate life of the School/College/University, displaying willingness to contribute actively to committees, collaborative teaching and administrative tasks



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Person specification (Reader)

- A proven track record in the area of cyber security research.
- Proven and sustained success in research leadership and/or managing staff and other resources of a significant academic area or project.
- Relevant experience of successful bids for research awards and research contracts.
- Quality of sustained range of published work, such as articles in leading refereed journals, authored books, contributions to edited volumes, etc.
- Other forms of assessable outputs, including: conference contributions, patents/published patent applications, software, internet publications, designs, artefacts, exhibitions, research reports for external bodies, devices and/or products, digital or visual media, scholarly editions, research datasets and databases.
- Evidence of impact of peer reviewed publications describing major discoveries, observations or innovative applications, as evidenced by citation rates or other appropriate norms for the field.
- Academic distinctions (e.g. academic awards, acting as a referee for leading academic journals and funding bodies, grant reviewer for awarding bodies).
- Invited addresses to, or organization of, international or major national research meetings and conferences;
- Significant research degree appointments as external examiner.
- Significant indications of esteem within and beyond academia, such as senior visiting appointments.
- Successful experience of collaboration, as evidenced for example through peer reviewed journal publications



The candidate profile

The ideal candidate will have prior experience of leadership within a (possibly multi-disciplinary) research group. In addition, candidates will possess or be able to demonstrate the following:

- Excellent first degree together with relevant higher degree.
- Membership of relevant professional bodies and relevant professional experience.
- International standing in the research field.
- Leadership on external bodies to enhance the international standing of the disciplines covered by this position.
- Ability to provide expert advice to colleagues, students and external bodies (e.g., government bodies).
- Major research experience in academia and in industry.
- An extensive list of internationally excellent publications.
- Demonstration of promotion of research.
- Evidence of significant income generation.
- Evidence of collaboration with other universities and industry.
- Ability to publish key findings in leading journals which further develop the reputation of the School, College and University.
- Ability to acquire funding for research from external agencies, for example RCUK (EPSRC, NERC) and the EU.
- Capabilities in effective resource planning and management.
- Ability to manage complex change situations; ability to deliver strategic planning, implementation and evaluation.
- Knowledge of quality assurance mechanisms.
- Ability to implement the mission of the School, College and University.
- Ability to promote equal opportunities.
- Ability to identify new areas of research and teaching.
- Effective problem solving abilities and creativity

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How to apply

Applicants are invited to submit their application online to us, via <http://www.bham.ac.uk/staff/jobs>

For Reader level appointment, as part of our senior recruitment process your application may be shared in confidence with two external assessors (these will typically be professors within a related academic field, but external to the University of Birmingham). Therefore your application may need to be sent outside the EEA. Their views may be sought on your suitability for shortlist and they will also be invited to be involved in electoral board interviews. If you have any queries or concerns please contact Prof. Mark Ryan (Head of the Security and Privacy group) on m.d.ryan@cs.bham.ac.uk to discuss further.

Lecturer salary from £39,993 to £47,722 a year, with potential progression to £53,690 a year.

Senior Lecturer / Reader salary from £49,148 to £56,950 a year, with potential progression to £74,259 a year.

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Security and Privacy group

Formed in 2005 as the Security and Privacy group, cyber security research at the University of Birmingham continues to grow each year. Now comprising eleven academics within the School of Computer Science, with collaborators in departments across the University, the group remains committed to tackling important issues across the breadth of cyber security. We are recognised by EPSRC and NCSC as an Academic Centre of Excellence in Cyber Security Research, and are dedicated to cyber security education with our GCHQ-certified MSc Cyber Security and healthy cohort of doctoral researchers. The Centre continually engages with government and industry partners to undertake intellectually important and societally impactful research to improve the security and privacy of all manner of electronic and connected systems. Current areas of expertise include:

- Applied cryptography
- Formal verification, methods and tools
- Vulnerabilities and attacks
- Automotive security
- Industrial control systems
- Internet of Things
- Side-channels and embedded devices
- Cloud security
- Electronic and online voting



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Security and Privacy group



Professor Mark Ryan (Professor of Computer Security, Head of group)

Applied cryptography and security protocols, formal analysis of security systems, Internet of Things security, cloud security, privacy, electronic voting, mobile phone protocols



Dr Flavio Garcia (Senior Lecturer, Senior Birmingham Fellow)

Automotive security, embedded device security, reverse engineering, lightweight cryptographic protocols, primitives and privacy



Dr Tom Chothia (Senior Lecturer)

Anonymity, distributed systems, RFID, industrial control systems, statistics and information theory, cyber security education



Dr David Galindo (Senior Lecturer)

Design and analysis of cryptographic protocols, distributed ledger technologies, electronic voting, privacy-enhancing technologies, societal aspects of computer security, post-quantum security



Dr David Oswald (Lecturer)

Embedded devices and hardware security, side-channel analysis, RFID, implementation attacks, real-world attacks



Dr Ian Batten (Lecturer, Course Director MSc Cyber Security)

Network security, secure systems management, computer systems architecture, cyber security education



Dr Christophe Petit (Lecturer)

Classical and post-quantum cryptography, cryptanalysis, cryptographic protocols, computer algebra, algorithmic number theory



Dr Eike Ritter (Senior Lecturer)

Modelling and analysis of protocols, formal verification, operating systems, security of pervasive systems, tools and methods



Dr Dave Parker (Reader)

Formal and quantitative verification, real-time analysis, verification of probabilistic systems, tools and methods



Dr Rami Bahsoon (Senior Lecturer)

Cloud computing security, software engineering for security, self-adaptive and self-aware software, economics-driven software engineering, architecture-level testing for security



Dr Mihai Ordean (Lecturer)

Secure cloud computing, systems security, industrial control systems and Internet of Things security, authentication

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School of Computer Science

The School of Computer Science was established in the late 1950s and became one of the first academic departments in the UK to undertake research and teaching in computer science. Some 60 years later, we now provide specialist teaching and conduct world-leading research in fundamental and applied computer science, artificial intelligence, optimisation, computer security, medical imaging, software engineering, human computer interaction and robotics. Our faculty is home to leading academics from various research areas, and we hope you will want to join us.

Our research feeds into our teaching, and we are proud to deliver outstanding programmes and offer a range of exciting opportunities for both our staff and students.

Our School is situated in a modern, multi-million pound purpose built building, that is home to dedicated computing laboratories, a teaching laboratory for Robotics, and research laboratories for Security, Medical Imaging and Intelligent Robotics. The University of Birmingham is recognised as an EPSRC/GCHQ Academic Centre of Excellence in Cyber Security Research. The University is home to the Centre of Excellence for Research in Computational Intelligence and Applications (CERCIA), The Human-Computer Interaction Centre (HCI), and the Centre for Computational Neuroscience and Cognitive Robotics (CNCR). We have a strong collaboration with the Centre for Computational Biology (CCB). We have private office spaces, a collaborative teaching and social space, wireless networks, a School-specific reference library and multi-purpose meeting spaces for our academic community. We believe in great relationships between our staff and student body, and operate regular social activities, in order to engage and get to know each other better.

Our teaching is consistently ranked highly in all reputable league tables and guides and we have the highest possible rating from the Quality Assurance Agency for Higher Education. We are currently ranked 8th for the quality of our research intensity in the REF (2014), and the University has been awarded a Gold rating in the 2016/17 Teaching Excellence Framework (TEF).

Staff

Our staff come from various specialist backgrounds in computer science and from many areas of the globe, and we are proud to have a diverse academic community. Find out more here:

<http://www.cs.bham.ac.uk/people/>



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Research groups

Our School is home to a number of leading research groups and our academic members of staff work collaboratively, to share knowledge and ideas. Our research areas include:

- Robotics
- Machine Learning
- Reasoning
- Natural Language Processing
- Natural Computation
- Medical Image Interpretation
- Human Computer Interaction
- Cyber Security and Privacy
- Software Engineering
- Theory of Computation



Teaching

Our teaching spans across undergraduate and postgraduate specialisms, and we are proud to offer a varied curriculum to our students. Our undergraduate BSc programmes include:

- BSc Computer Science (also with Year in Industry/Study Abroad)
- MSci Computer Science (an integrated BSc+MSc)
- MEng Computer Science with Software Engineering
- BSc Artificial Intelligence and Computer Science
- NEW BSc Computer Science with Digital Technology Partnership (PwC)

Our postgraduate taught programmes offer learning in a variety of computing disciplines:

- MSc Computer Science (we were one of the first institutions to offer a 'conversion' course)
- MSc Advanced Computer Science
- MSc Robotics
- MSc Human Computer Interaction
- MSc Cyber Security

We also offer two research degrees, and the expanse of expertise in our academic staff allows many topics to be covered:

- MRes Natural Computation
- PhD Computer Science



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Award-winning development

At the School of Computer Science we are not just renowned for teaching and research excellence. We also produce novel solutions for real-world applications, including;

- Working with Jaguar Land Rover to make their vehicles more secure
- Contributing to the development of the Trusted Platform Module which makes
- many of our computers capable of secure cryptographic operations
- Deploying autonomous, intelligent robots in security and health support facilities
- Developing a revolutionary, award-winning method for diagnosing skin cancer



Our College

The University consists of five academic colleges, and the School of Computer Science is part of the College of Engineering and Physical Sciences. Our College [comprises seven academic Schools](#) working across the frontiers of science and engineering in [education, research and translating knowledge](#). Our focus and contribution to society is based around three core themes of the Science Frontiers, Advanced Manufacturing and Resilience, Energy and Sustainability. Find out more here:

<https://www.birmingham.ac.uk/university/colleges/eps/index.aspx>



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The University

We have a long and proud history of firsts at the University of Birmingham; we were the first – and are now one of the largest – civic universities in the UK. We were also the first UK University to, amongst other things:

- Be built on a campus model
- Establish a Faculty of Commerce
- Incorporate a Medical School; and
- Welcome women to take medical degrees

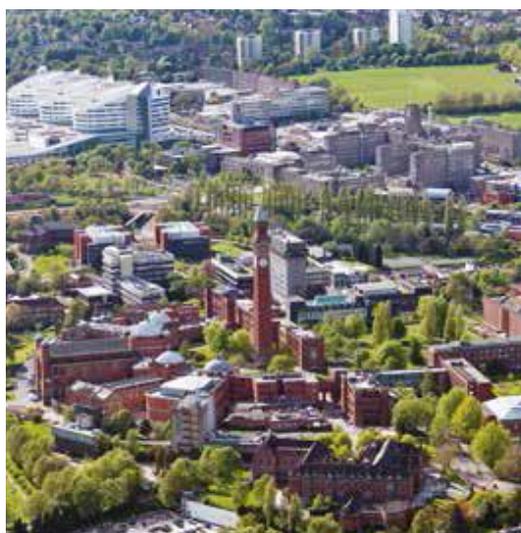
More recently we were the first university to establish a fully comprehensive secondary school and when we open our new campus in Dubai this autumn, we will become the first Russell Group and Global Top 100 university to do so.

Our heritage as the original 'redbrick' is combined with one of the most compelling and ambitious agendas in higher education. Quite simply, at Birmingham we make things happen. Birmingham is a leading member of the Russell Group and a founder member of the Universitas 21 global network of research universities.

Home to world-class researchers, we count 11 Nobel Laureates among our staff and alumni, including three prizes awarded in 2016 for Physics and Chemistry. We have been integral to some of the greatest scientific discoveries of recent times, such as the Higgs boson and gravitational waves, and are pioneering new approaches to tackling some of the biggest global challenges facing society; from antibiotic resistance and maternal health to conflict resolution and access to education.

With more than 7,500 staff, 34,000 students and 300,000 alumni across the globe, we think, recruit and compete worldwide. Ranked in the top 100 universities globally and the top 20 in all domestic league tables, the quality of what we do at Birmingham is widely recognised. We were awarded Gold in the 2017 Teaching Excellence Framework and in the most recent Research Excellence Framework (REF2014), more than 80 per cent of our research was rated as internationally excellent or world-leading.

In 2014 *The Times* and *The Sunday Times* named us **University of the Year** in recognition of our bold, ambitious strategy and innovative approach to the challenges facing the sector. In 2016 they named us **University of the Year for Graduate Employment** – recognising our sector-leading employability programmes and outstanding rates of graduate employment. Thinking differently is in our DNA. Led by our Vice-Chancellor, Professor Sir David Eastwood, the University is structured for swift decision-making, enabling us to capitalise on our academic range and financial strength as well as the opportunities that emerge in the fast-changing global HE environment. Many of our initiatives, such as our 'Birmingham Fellows' programme, which has so far seen over 70 of the world's best early-career academics join us, our widening participation activities, and our unconditional offers strategy for exceptional students, have been much emulated within the sector.



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The city of Birmingham

The city of Birmingham has undergone a major transformation in the last decade and regularly features as top place to visit – in fact, it was the only place in the UK listed in the Rough Guide's Top 10 places in the world to visit in 2015. In a recent Sunday Times/Zoopla report 'Best Places to live in Britain' three areas of Birmingham all made the top 50 best places to live in Britain, with the suburb of Moseley being voted the overall winner.

A city of historical interest and contemporary vision, Birmingham has a rich and diverse community that creates a vibrant, multicultural and exciting place to live and work.

The city is home to the internationally renowned Birmingham Royal Ballet and one of the world's greatest concert venues: Symphony Hall. The City Museum and Art Gallery houses the world's finest collection of Pre-Raphaelite paintings, alongside a major collection of Old Masters, Modern and Contemporary pictures, while the iconic Bullring is one of the largest dedicated shopping facilities in Europe. Sports and recreation are also well served; the city offers international Test cricket, high-level football, international championship golf and tennis, and top-class rugby. As a multicultural city, Birmingham is also renowned for the breadth of its cuisine and has more Michelin-starred restaurants than any other English city outside London.

Birmingham is within an hour's drive of Stratford-upon-Avon and the Cotswolds. From Birmingham Airport, more than 50 different airlines operate scheduled services to 100 destinations worldwide. The University has its own dedicated railway station, while 50 million passengers a year use Birmingham New Street Station, and the city will be a major hub for the high-speed rail network. London is 80 minutes away by shuttle service, with trains every 20 minutes.

