

I994 group >

Established to promote excellence
in university research and teaching

innovative practice report

industry sponsored master's degrees

how is industry working with universities to create sponsored master's?

At a time when all aspects of higher sector are subject to a 'value for money' focus, it is increasingly important that the higher education sector demonstrates its worth to individuals and business. There is a need for universities and businesses to work more closely together on the design and delivery of courses to ensure they are providing the high-skilled individuals that our economy and society needs.

1994 Group universities are developing strategic partnerships with industry to design and deliver Master's programmes. Working with organisations as diverse as the Ford Motor Company, American Express, Government departments and the Nuclear Decommissioning Authority 1994 Group universities are developing new Master's degree programmes to directly meet the demands of employers and employees.

This report sets out a range of examples where businesses have approached members of the 1994 Group to assist in developing the high levels skills of their workforce. These examples show how world-leading academics and senior business executives have come together to design, develop and deliver industry-sponsored Master's courses that enhance employability and meet employers skills needs.

index

- > MSc Automotive Systems Engineering
Loughborough University and Ford Motor Company
- > MA Brand Development
Goldsmiths, University of London and The Brand Union
- > MEng Embedded Systems
University of York and Crossrail Ltd
- > Postgraduate Skills for Nuclear Decommissioning
Lancaster University and the Nuclear Decommissioning Authority
- > MSc Gas Turbine Control
University of York and Rolls-Royce plc
- > MSc in Petroleum Geoscience
Royal Holloway, University of London and TNK-BP
- > MSc IT for E-Commerce / MSc Human-Centred Computer Systems
University of Sussex and American Express
- > MSc Policy Analysis and Evaluation
Institute of Education, University of London and the Cabinet Office
- > MA Policy, Management and Government
University of York and the Department for Work and Pensions
- > MSc in Green Chemistry & Sustainable Industrial Technology
University of York, BP and GlaxoSmithKline
- > MA in Developing Professional Practice (Health Care)
Lancaster University and several NHS Trusts
- > MSc in Reliable Embedded Systems
University of Leicester and TTE Systems Ltd

Loughborough University



case study > Ford Motor Company

Since 1986 **Loughborough University** has worked closely with the automotive industry, principally the Ford Motor Company, in designing, developing and delivering part-time MSc programmes in automotive engineering.

Originally open only to Ford employees, the **MSc in Automotive Systems Engineering** was made available to other automotive companies in 2000. To date over 300 engineers have graduated from the part-time programme, a significant number of whom are now in senior positions in the industry.

Aimed primarily at product development engineers working in the automotive industry, the programme gives students a knowledge of and technical expertise in a range of automotive disciplines. It provides them with a comprehensive viewpoint for automotive design and manufacture, transferable skills and knowledge that is applicable to the workplace.

In 1995, at the request of Ford, the programme was revised to incorporate the theme of systems engineering. The programme's strong automotive engineering content was retained, but a more flexible structure was introduced, allowing a wider choice of modules and giving students the option to pursue particular routes through the programme according to their needs and interests.

Although the programme is no longer exclusively for Ford employees, the company continues to be strongly involved in its ongoing development. Staff from the company advise on module content, give specialist lectures and are members of the Industrial Advisory Committee, which advises the University on emerging issues in the automotive sector and regularly reviews the relevance of topics covered in the modules.

The significant industrial involvement in the MSc also benefits undergraduate teaching – for example, as part of the University's commitment to sustainability and renewable energy, the Department of Aeronautical and Automotive Engineering this year began delivering an undergraduate module in Low Carbon Vehicle Technologies. The ability to design and deliver topical subjects like this is only possible because of the expertise built up through the MSc programme.

case study > The Brand Union

Global brand agency, The Brand Union, and **Goldsmiths, University of London** have developed a unique, international Master's degree in Brand Development.

The unique Master's degree is an initiative of the respected James Curran, Professor of Communications and Director of the Goldsmiths Leverhulme Media Research Centre, and Crispin Jameson, Worldwide Chief Strategy Officer for The Brand Union. Goldsmiths and The Brand Union, whose clients include SABMiller, Vodafone, Canon and Reckitt Benckiser, collaborated to develop the course structure and content. Throughout the curriculum, The Brand Union will play a key role, providing guest speakers and presenters from around the global network, sharing live client briefs for the students to work on, and culminating in the offer of a placement within the agency.

The postgraduate degree, takes a rigorous, academic approach to the study of contemporary branding and communications methodologies and their social, economic and political contexts. Key themes such as intellectual property rights, the changing media environment, globalisation and the impact of digital communications and marketing technologies will also form part of the syllabus.

Simon Bolton, Worldwide CEO of The Brand Union says; "Central to our philosophy is the quest for Brand Mastery, and so it is natural that we would want to connect to a Master's degree at Goldsmiths – a unique and distinctive higher education institution, well-known for its innovative and creative approaches. The culmination of nearly two years' worth of planning, this initiative is the most significant way we could realise our commitment to the next generation of branding and design talent.

"The Brand Union is passionate about investing in skills and education, we believe that the art and science of brand building is something which we can help students understand before they enter the creative workforce. Through this experience, we hope to create that connection between what students are taught and what clients need from their branding partners; this is the most meaningful way we could do that."

case study > Crossrail Ltd.

The **University of York** works in partnership with Crossrail Ltd, to offer a Master's course in Computer Science. Through an innovative agreement, Crossrail, (the company delivering the new railway for London and the South-East - Europe's largest civil engineering project) provides annual sponsorship of £60,000 for the Master of Engineering course in **Embedded Systems**.

The four-year course offered by the University's Department of Computer Science gives students practical experience of hardware and software development and the opportunity to work closely with a major industrial collaborator.

Crossrail engagement in the Master's is wide ranging. They are involved in the design of the course prospectus, provide guest lectures, and an annual prize for the outstanding student. Students on the course are given the opportunity to visit Crossrail's premises in London and may also be offered one-year internships on the project. An embedded systems laboratory in the new Computer Science building, currently under construction on the University's Heslington East campus, expansion will be named 'the Crossrail Laboratory'. The agreement will see the establishment of an annual Crossrail public lecture which will feature speakers from the rail sector. The Department will also explore the potential for research projects and workshops with Crossrail.

The Head of Computer Science at York, Professor John McDermid, said: "This is an exciting partnership with a company behind the transformation of transport infrastructure in one of the world's great cities. Crossrail's involvement will result in students with first-hand experience of working with embedded systems, and the technical and personal skills to be of immediate and long-term benefit to industry."

Crossrail's Talent and Resources Director, Valerie Todd, said: "Crossrail is a project of national significance and has always valued investment in training future talent. The Master of Engineering course will help foster such talent by providing a high-quality learning environment and creating a large bank of skilled engineers who will be an asset to the industry."



Lancaster University

case study > Nuclear Decommissioning Authority

The Nuclear Decommissioning Authority (NDA) has awarded **Lancaster University** £2.3m to help run the most comprehensive graduate programme the nuclear industry has ever seen. The National Graduate Programme is running initially over a 47 month period and is backed by more than 20 leading companies, including Rolls-Royce, BAE Systems and Toshiba, and aims to plug a nationwide skills gap in decommissioning.

The industry faces a shortage of qualified engineers and graduates in finance, communications, HR and environmental science.

The graduates will be employed by the University on a 2 year fixed term contract and placed in three 6 month placements at nuclear installations across the UK, as well as one 3 month international secondment in the United States, Japan, France or Sweden.

There will also be 480 hours of training with the aim of turning the graduate into a chartered professional. This will be a blend of behavioural and technical training offsite at the NDA's nuclear graduate training facility, where subjects will range from team communication to commercial awareness.

The graduates will be supported by a directorial sponsor, training mentor and personal sponsor, as well as individual project mentors and line managers. There will be the chance to work across the entire nuclear sector from decommissioning, energy supply, defence, nuclear processing and logistics. A tenth of the time will be spent on corporate social responsibility, supporting local businesses, community groups and schools.

Lancaster's Engineering Department developed the module structure and learning objectives with the NDA and from these discussions identified that although some safety engineering modules were relevant to decommissioning specialists others were less appropriate. In response to these findings they created in partnership modules on decommissioning robotics and decommissioning project management specifically to meet the needs of this industry.

In the academic year 2009/10 30 students sponsored by 7 different companies are registered for the MSc in decommissioning. The decommissioning programmes in the university have been boosted by sponsorship of the Lloyd's Register Educational Trust Chair in Nuclear Engineering and Decommissioning which has established an industry-facing research group working alongside the MSc programme.

case study > Rolls-Royce Plc.

The MSc in Gas Turbine Control at the **University of York** was established following the identification by Rolls-Royce plc and the Goodrich Corporation of a need to provide further higher level training to their graduate engineers working in the design, verification and qualification of control systems of their organisations.

The MSc in Gas Turbine Control is a part-time Masters course delivered by the Department of Computer Science, University of York and it has recently received its fifth intake of students, who are industry sponsored by Rolls-Royce plc and Aero Engine Controls Ltd (a Rolls-Royce plc and Goodrich Corporation Joint Venture). Rolls-Royce design and manufacture gas turbines for a range of applications including civil and military aviation, naval and commercial marine, and land-based installations. In the aviation market Rolls-Royce contracts out the design and manufacture of all control systems hardware and Aero Engine Controls Ltd are the largest supplier of these control systems and equipment.

The company placed the commission for the MSc with York following a tender process. This recognised the Department of Computer Science's international reputation in the area of systems safety, as well their strong relationship established through the Department's involvement with Rolls-Royce plc as a University Technology Centre in Software and Systems Safety Engineering.

The MSc in Gas Turbine Control is a four year programme and encompasses mandatory and optional taught modules as well as a significant project which is ordinarily based upon an industrially-based outline. It is delivered with specialist input from other institutions including Loughborough University and the University of Sheffield.

Whilst the MSc in Gas Turbine Control course is designed specifically to meet the needs of the sponsoring companies, it remains an open MSc and fits within the rigorous academic requirements of the University. The continued success of the course is due to the close relationship maintained by the Department and the sponsoring organisations, who meet on a regular basis to discuss the provision and ensure that the course content remains relevant whilst being of high academic integrity.

case study > TNK-BP

Royal Holloway, University of London is one of the leading international centres for Petroleum Geoscience training and research. The MSc programme was established in 1985 and with over 600 graduates from 32 countries, it is recognised around the world as one of the premier training courses for people starting out on careers in the hydrocarbon industry.

Along with the online distance-learning study option, the Masters can be followed at Royal Holloway's campus, or at the campus located in Tyumen, Siberia, taught in conjunction with Tyumen State Oil and Gas University and funded and developed in partnership with TNK-BP, one of the largest oil companies operating in Russia. The state-of-the-art laboratories at Tyumen University have been equipped, with support from TNK-BP, with similar advanced computing facilities to those at Royal Holloway, enabling students to work with standard oil industry software.

Richard Herbert, Executive Vice President, Technology Stream, TNK-BP Management said: "TNK-BP is proud of the centre for professional training and retraining of specialists in geology and oil and gas engineering. By establishing this new programme, we are thinking of the future, which will be determined by new technologies and ideas, education, and universities. This initiative will make it possible for Russian graduates to benefit from a high-quality European education from the Department of Earth Sciences at Royal Holloway, University of London and the educational resources of Tyumen State Oil and Gas University."

TNK-BP will sponsor 20 students a year, initially for two years, and the two universities will aim to recruit additional students from other companies operating in Russia. The degree will provide highly qualified graduates, who can work across a range of disciplines in a team environment. Places on the course were highly sought-after and the first 20 students were selected both in terms of academic ability and suitability for employment with TNK-BP on completion of their studies.

There is a major demand for well-trained Petroleum Geoscientists. Hydrocarbons are a precious resource, and finding new reserves is becoming ever more challenging. At the same time it is becoming increasingly important to maximise recovery of reserves from existing fields. The Royal Holloway MSc in Petroleum Geoscience provides graduates with training in the practical and technical skills required to address a range of questions.

case study > American Express

Since September 2003, over 100 students have passed through two groundbreaking Masters programmes that the **University of Sussex** created in partnership with American Express.

The University of Sussex and American Express offer a scheme in which students work for two years part-time for American Express, based in the Sussex Innovation Centre on the University of Sussex campus, while also studying in the School of Informatics for an MSc either in **Information Technology for E-Commerce** or in **Human-Centred Computer Systems**. The selection process for applicants is carried out by American Express, who conduct a rigorous set of interviews and structured assessments; successful applicants are then accepted onto their MSc programme by the university. Students' tuition fees are paid by American Express, which also pays a part-time salary.

The partnership is now in its sixth year. To date, over 100 students have passed through this 'University Development Centre (UDC)' scheme. To date, American Express has taken on around half of the students at the end of their degree. In general, UDC graduates have a faster rate of advancement within American Express than comparable employees. Some UDC graduates have already progressed to management level in the company and are themselves coaching and leading new UDC students and graduates through work placement projects.

The scheme delivers substantial benefits to students, American Express, and the university:

- > students gain funding to do a Masters, hands-on work experience for a global blue chip organisation, and the prospect of becoming a permanent employee when they graduate;
- > American Express gains a pool of creative and talented individuals, and a recruitment pipeline;
- > Sussex University gains extra funded Masters students, and detailed feedback for curriculum development from an industry perspective, informed by relevant company business requirements.

The partnership continues to develop. Recent initiatives include company engagement with the university's research portfolio, and a broadening of the scheme to include two further MScs at Sussex: an existing MSc in Intelligent Systems (in Informatics), and an MSc in Technology and Innovation Management (in the Sussex School of Business, Management and Economics).

University of Sussex



case study > The Cabinet Office

The MSc in Policy Analysis and Evaluation is the result of an innovative collaboration between the Cabinet Office's Government Social Research Unit (GSR) and the **Institute of Education, University of London**. This qualification was designed to address a need identified by GSR to provide training courses in evidence-based policy making and particularly to upgrade the skills of GSR members in quantitative methods.

In 2004 a Skills Audit was conducted of most Government Social Researchers. This showed that although around three-quarters had a postgraduate qualification, making them one of the highest qualified groups working within government, the proportion with a research-based postgraduate degree was only around 50 per cent. The course was developed to meet the need for part-time, work-focused training and professional development across the whole range of research and evaluation methods used in government and the public policy arena.

The Institute of Education was uniquely positioned to work in partnership with the Cabinet Office to design and deliver an award-bearing programme. The Institute had good links with the Cabinet Office and was already contracted to deliver two related stand-alone courses in systematic reviewing and longitudinal data and analysis. Additionally, it has a long and distinguished track record in teaching academically rigorous, policy-relevant subject material and has strengths in research methodology and analysis. The course was devised collaboratively as a Master's level modular degree to be completed part-time over two years and designed to provide students with an understanding of the major quantitative research skills relevant to designing, analysing and evaluating government policy – blending advanced evaluation methods with 'real world' application of such methods.

The first cohort started the course in 2005 comprising 19 students from nine government departments and agencies. The course began as a 'closed' programme limited to government staff recruited through the Cabinet Office. Now in its fifth year of operation, the MSc is no longer a 'closed' course. It is open to participants working in all policy areas, be they researchers in government, managers of research related to policy, or in other related fields.

case study > Department for Work and Pensions

The Certificate, Diploma and Masters in Policy, Management and Government is a professional development programme delivered by the Department of Social Policy and Social Work at the **University of York** for the Department for Work and Pensions.

The programme, delivered following the award in 2006 of a three- year contract, was commissioned by the Department as part of its then corporate education programme, and is designed to develop the capability of its managers in policy and management issues. The content of the programme reflects the Professional Skills for Government agenda that is currently shaping professional skills in central government, and enables mid-career managers to develop their strategic capability.

In commissioning this programme the Department were particularly concerned with flexibility: they needed provision that would be accessible to employees across the country, with the minimum possible time away from the workplace and yet with strong shared learning and networking. The University was able to meet this need through a blended approach that combines e-based study with an optional face to face element. Participants study each ten-week module online through a closely supported and structured process of individual and tutorial group learning. This process allows them to share experience and best practice with an international community of public managers in over 50 countries. They then come together for optional face-to-face study days in which they consolidate their learning and reflect on its application within the Department

This blended approach enables learning that is both flexible and structured, and that enables participants to develop their understanding of public management in an international context. The programme has also benefited from the knowledge and understanding of DWP within the Department of Social Policy and Social Work. This has grown out of substantial research links and a record of successful part-time programmes tailored to DWP's needs.

case study > BP & GlaxoSmithKline

The MSc in Green Chemistry & Sustainable Industrial Technology at the **University of York** secured initial funding from the EPSRC and industrial sponsors BP and GlaxoSmithKline. There are currently 21 students on the course from 8 different countries and they will collaborate with a minimum of 15 companies in their projects.

Past and present Industrial Sponsors of the course include GSK, Marks & Spencer, Cytec, Botanix, BP, Pfizer, Victrex, Robinson Brothers, Infineum, British Sugar, Johnson Matthey, Syngenta, Unilever, Novartis and Boots. Sponsors provide a variety of support for the course, including financial support for projects, delivery of taught material, access to their sites for visits, the experience and advice of senior Staff on our External Advisory Board, and direct student sponsorship.

There is increasing pressure from both society and Governments for chemistry-based industries to become more sustainable through development of eco-friendly products and processes that both reduce waste and prevent toxic substances from entering the environment. Industry is making progress, but it is frequently commented that new graduates are not adequately equipped with the tools, techniques, and 'culture' to ensure that they can rapidly make a positive impact on industry's increasing requirement for clean technology and sustainable development.

The course is designed to fulfil this need and provide students with an awareness and understanding of the environmental, economic and social factors behind the drive towards a more sustainable use of chemicals. It will help students on many career paths including the manufacturing industry, scientific research, legal and environmental services, government, NGOs and the retail trade.

Master's research projects have led to further collaboration with industry. Examples of this include Pfizer (fully-funded PhD), GSK (industrial CASE PhD), Botanix (CASE PhD), Brocklesby Double Green (KTP Project) and Armstrong World (TSB Project).

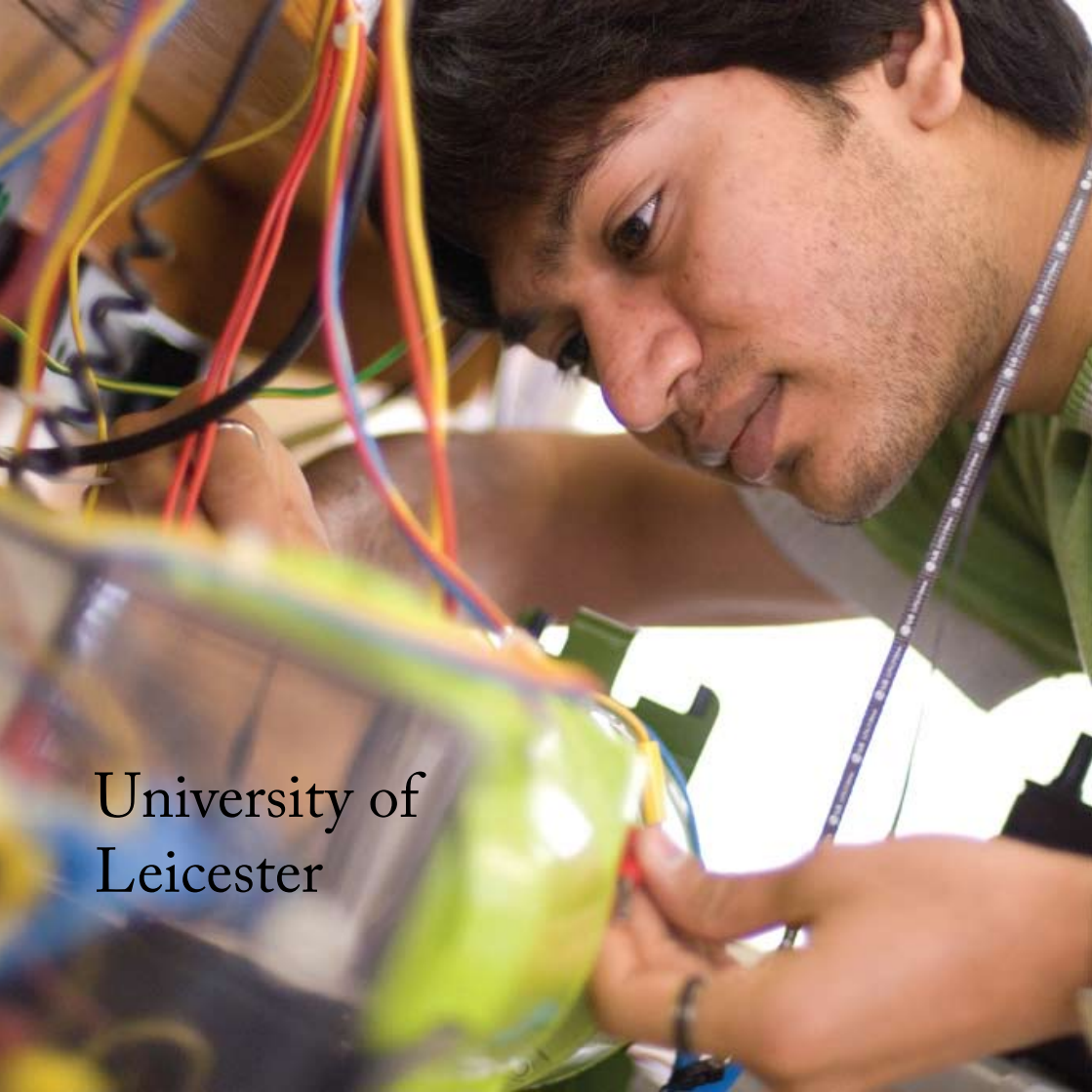
case study > National Health Service

A part-time work-based Master's Degree in Developing Professional Practice (Health Care), was developed, in dialogue with several NHS Trusts. It was initiated by a specific request from the Chief Executive of the University Hospitals of Morecambe Bay NHS Trust and the Centre for Training and Development within the School of Health and Medicine at **Lancaster University**,

The programme is multi-disciplinary and is aimed at senior practitioners across all health care professions, supporting them to manage change and bring about improvements in service delivery. It is a highly contextualised programme, enabling students to focus on real work agendas and projects, in addition to achieving an academic award. Flexible entry requirements mean that non-graduates with suitable experience and aptitude can be accepted on the programme and it therefore widens access to a wider range of professionals.

The three modules in part one of the MA focus on drivers for change, strategies for implementing change and the evaluation of change. Part two consists of a work-based project negotiated with the participant, their employer and the university, making it extremely useful and meaningful because it has been developed through a partnership. The project may involve designing, implementing or evaluating some system or service at work, or it may focus on any number of other aspects of the workplace. This ensures that the participants' own professional development needs, the organisational needs of the employer and the requirements of the University are all met. The project is written up and submitted as a dissertation.

In recognising the challenges of combining work and study, attendance on the Master's Degree is kept to a minimum, with the requirement being just 19 days over 2 years. Workshops are highly interactive and participative and delivered by staff who are both tutors and NHS practitioners. Action learning sets are combined with on-line materials and discussion. There are no exams; assessment is by coursework with assignments being varied and so useful for both work and academic assessment. They include learning contracts, project proposals, reports, reflective commentary and oral presentations.



University of
Leicester

case study > TTE Systems

Today, embedded processors have become a core component of an enormous number of systems. One can find them in everything from aircraft and cars to medical equipment, children's toys and DVD players. Key parts of the reliable embedded systems technology upon which they are based were conceived and developed at the **University of Leicester**.

Having started as a research project, the technology went on to spawn a start-up company – TTE Systems Ltd – that now manufactures and markets the technology worldwide. With the uptake of the company's RapidITy product becoming more and more widespread, a two-year postgraduate MSc in Reliable Embedded Systems has been created at the University of Leicester, in partnership with TTE Systems Ltd to meet the evolving requirements of engineers working with the new technology.

The joint development of the MSc in Reliable Embedded Systems marks the continuation of a productive and innovative cycle of collaboration between the University of Leicester and TTE Systems Ltd - with cutting-edge university research feeding industry developments, which in turn develop and inform course enhancements that benefit students. The course itself demonstrates an equally high level of innovation and collaboration. Delivered by distance learning, it allows laboratory equipment to be accessed remotely through the internet via a web cam, which is ideal for overseas students.

industry sponsored master's :the conclusion

Universities have an increasingly important role to play in meeting the needs of individuals and the UK economy for more highly skilled graduates to drive modern, fast-growing industries.

Through innovative partnerships between business executives and leading academics 1994 Group universities and employers are working together to develop Master's courses that are successfully enhancing individuals' skills and meeting industry needs.

1994 group >

Established to promote excellence in university research and teaching

The 1994 Group is established to promote excellence in university research and teaching. It represents 19 of the UK's leading research-intensive, student-focused universities. Around half of the top 20 universities in UK national league tables are members of the group.

> Each member institution delivers an extremely high standard of education, demonstrating excellence in research, teaching and academic support, and provide learning in a research-rich community.

> 1994 Group Universities achieved outstanding results in the Research Assessment Exercise (RAE) 2008. 1994 Group members are UK leaders in seventeen major subject areas, achieving 1st place in their field. 57% of the 1994 Group's research is rated 4* world-leading or 3* internationally excellent.

> The 1994 Group represents:

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University of Exeter
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Institute of Education, University of London
Royal Holloway, University of London
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**Established to promote excellence
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Telephone: +44 (0)20 7872 5598

Email: enquiry@1994group.co.uk

Website: www.1994group.ac.uk

1994 Group
1 Northumberland Avenue
Trafalgar Square
London WC2N 5BW

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