SHAPE OUR SUCCESS

ENGINEERING AND PHYSICAL SCIENCES
The University of Southampton is a world-leading, research-intensive university, with a strong and high quality educational offering, renowned for its innovation and enterprise.

It is a founding member of the Russell Group - an organisation of 24 top UK universities committed to maintaining the highest research and teaching standards. Southampton is ranked in the global top 100 universities in the QS World University Rankings and 20th in the UK’s Complete University Guide 2020, with 15 of its subjects in the national top 10.

Southampton is ranked 8th in the UK for ‘research intensity’, according to Research Excellence Framework (REF) 2014, which assessed the quality of research in UK higher education institutions. The University is also a three-time winner of the Queen’s Anniversary Prize, most recently for its expertise in photonics and fibre optic technology.

In 2018, the University was awarded Silver in the Teaching Excellence and Student Outcomes Framework (TEF) for its quality teaching and learning. Southampton is also a founding signatory of the Athena Swan Charter and holds a silver-level Athena SWAN award.

The University’s mission is to change the world for the better. Central to the success of this strategy and underpinning all of the University’s activities are four principles. These principles are: Collegiality, one team working, planning and delivering together, toward our shared vision; Quality, always striving to achieve the highest quality in everything we do; Internationalisation, delivering across global markets and building strong partnerships with other leading organisations; and Sustainability, ensuring our actions lead to financial, social and environmental sustainability.

The University’s structure includes five faculties, where our academic and research activities take place: Arts and Humanities, Engineering and Physical Sciences, Environmental and Life Sciences, Medicine and Social Sciences.
Our University community is committed to the highest quality in everything we do. We have a global reputation for our passion and ability to work collaboratively in delivering world-class education, research and innovation that makes a real impact on society’s biggest challenges.

Collegiality is one of our four core strategy principles, and is at the heart of everything we do. Collegiality highlights how we all have a role to play in working together to achieve our vision.

Here at the University, we have developed a set of behaviours which set out our expectations of all staff. These behaviours demonstrate the steps we can all take to becoming simply better. The Southampton behaviours of working together, developing others, delivering quality and driving sustainability are underpinned by personal leadership and will enable us to embed collegiality throughout the University.

Our exceptional students share in the journeys of discovery and become confident thinkers who can realise their full potential. We attract high-quality students from over 150 countries. We educate students through our Malaysia Campus and collaborations with prestigious partners globally.

As students become graduates of the University they join our wider, global community of over 230,000 alumni and are able to access a network that can provide further opportunities across the world.

As a forward thinking institution, we will strengthen our reputation, increasing our national and international rankings to secure a position in the top 10 in the UK and strengthen our position in the top 100 internationally. A reputation for delivering excellence and an exemplary student experience will lead to increased demand from the best students, sustained support from research funders and strong support from our alumni.

To help us increase our reputation and ultimately our rankings, we align our activities with our four principles: collegiality, quality, internationalisation and sustainability. Through these principles we build on our successes to deliver internationally excellent research, a high-quality education and student experience, and develop strong sustainable relationships with key partners. These actions will help us achieve a financially, socially and environmentally sustainable university.

Work with us: together we advance.

Find out more:
The University strategy
The Faculty of Engineering and Physical Sciences is the largest of the University’s faculties and one of the biggest and most successful faculties of its kind in the UK.

It includes the Schools of Chemistry, Electronics and Computer Science, Engineering, Physics and Astronomy, and the Zepler Institute for Photonics and Nanoelectronics (incorporating the Optoelectronics Research Centre), together with the research-led Web Science and Southampton Marine and Maritime Institutes.

The Faculty’s specialist teaching and research laboratories and testing facilities, including one of the world’s leading cleanroom complexes, are spread across the University’s Highfield and Boldrewood Innovation Campuses. It is home to over 3,800 undergraduate students, over 700 postgraduate taught students, over 1,000 postgraduate research students, over 200 support and technical staff, and over 900 education, research and enterprise staff.

National and global recognition of our achievements include those with significant Fellowships, honours and awards. The Faculty is home to 12 Fellows of the Royal Society and 19 Fellows of the Royal Academy of Engineering (including Visiting and Emeritus Professors).

In the QS World Rankings 2020, the University of Southampton ranked 97th, with FEPS subjects:

- Mechanical, Civil and Mining Engineering, Physics and Electronic and Electrical Engineering (EEE) in the top 50 to 100
- Computer Science in the top 100 to 150
- Chemistry in the top 150 to 200

We are driven to sustain and grow excellence measured by national and international metrics in education, research and enterprise, underpinned by understanding the value and cost of activities, strong leadership and a positive working environment and culture for all staff.

A successful Faculty is based on collaborative Schools with clear operational and financial governance. We firmly believe that a shared commitment to Faculty-led and School-led priorities will complete objectives that lead to the delivery of sustainable academic excellence.
**Education**

We offer students a vibrant and transformative education experience. Our international reputation attracts students from around the world to study and research on innovative programmes that provide access to renowned academics, unique and cutting-edge facilities and a community that is exciting, ambitious and dynamic. Our future prosperity in a digital world relies on deep and designed collaboration between disciplines to enhance student learning.

The Faculty emphasises innovation in education, leading the way with programmes such as our MSc Chemical Engineering which focuses on environmental sustainability rather than petrochemicals.

Our state-of-the-art facilities are integral to our curriculum and enable students to gain invaluable experience to take forward into their careers. The Destination of Leavers from Higher Education (DLHE) Survey (2016/17 representing the latest available data) reported positive destinations for 87 per cent of Faculty respondents.

The average tariff at entry is 165 for 2019/20, which is significantly above the institutional average of 150.

Engineering and Physical Sciences offers a total of 374 programmes, of which over two thirds are provided in the Schools of Engineering and Electronics and Computer Science. There are a number of programmes in development, including an MSc in Quantum Engineering which will welcome its first cohort in 2020/21 and a BEng/MEng offering in Chemical Engineering and Biomedical Engineering which are being targeted for the following academic year.

In the Guardian University Guide 2020, the University of Southampton ranked 24th, with FEPS subjects:

- Civil Engineering 5th
- EEE 6th
- Mechanical Engineering 11th
- Physics 15th
- Computer Science and Information Systems 17th
- Chemistry 23rd

The National Student Survey 2019 rated the overall satisfaction of students in Engineering and Physical Sciences at 86.3%, representing the highest Faculty score at the University.

Recent successes from our talented student community include engineers from the Southampton University Formula Student Team (SUFS) being the top ranked UK team at August’s Formula Student Czech Republic competition and electronic engineers being awarded UK Electronics Skills Foundation (UKESF) Scholar of the Year and Embedded Systems prizes in November’s national TechWorks Awards.

**Research**

Engineering and Physical Sciences is home to a very successful and highly active research community. Our research ecosystem is over 2,000 people strong and includes academics, fellowship holders, postgraduate researchers and technical staff.

Our staff hold 57 prestigious fellowships from a diverse range of sources. Recent successes include the award of two 10-year Royal Academy of Engineering (RAEng) Chairs in Emerging Technologies, amongst just eight UK-based researchers announced in the latest cohort. There are more than 25 grants valued at over £1m that are currently held by Faculty staff.

The Faculty engages with a number of United Kingdom Research and Innovation (UKRI) councils and grant providers. This ranges from one of the largest funders in the EPSRC (Engineering and Physical Sciences Research Council) through to smaller and more specialised councils such as STFC (Science and Technology Facilities Council) and NERC (Natural Environment Research Council). We have also been successful in securing large grants from European funding sources and a number of industrial grants from large corporations. In 2019, the Faculty established a new Centre of Maritime Futures with Shell Shipping and Maritime, funded by the largest corporate gift in the University’s history.

The Faculty’s annual research income is around £60m. The total value of live Faculty grants from the EPSRC is £160m, representing 84% of the University total.

In the Research Excellence Framework (REF) 2014 Electronic and Electrical Engineering (EEE) and General Engineering were both ranked first in the country for the volume and quality of their research.

In 2020, the Faculty will launch four cross-disciplinary Centres of Excellence that will push the frontiers of emerging disciplines that have the ability to transform the research landscape. The Centres will focus on in situ and remote intelligent sensing, re-engineering for electric mobility, continuous digital chemical engineering science and the future of human communication.
Enterprise

The Faculty has established a thriving enterprise culture that is having a significant impact on many areas of business and daily life. Enterprise in Engineering and Physical Sciences is taking knowledge that is generated from our research and education and using our specialist resources to deliver a positive economic, societal and cultural impact on a local, national and international scale.

The Faculty is home to seven Enterprise Units which are applying knowledge to create impact:

- Institute of Sound and Vibration Research Consulting (ISVR-C)
- Wolfson Unit for Marine Technology and Industrial Aerodynamics
- University of Southampton Auditory Implant Service (usAIS)
- nC2 engineering consultancy
- Electronics and Computer Science (ECS) Partners
- E&E Partners
- Future Worlds accelerator

The annual internal spend that our Enterprise Units have drawn to our research facilities is worth over £1.1m.

There are 12 Faculty spin-outs that have started or are in flight, representing 75% of the University total (16). These include Curve Therapeutics (Chemistry), Pointcloud (ECS), SONET.ai (Zepler Institute for Photonics and Nanoelectronics), TopMD (ECS) and Radii Devices (Engineering).

Patents filed by Faculty researchers in 2018 represent 78% of the University total.

We are also home to strategic partnerships with companies such as the Defence Science and Technology Laboratory (Dstl), Siemens and Thales.

Future Worlds is the Faculty’s on-campus startup accelerator. Founded in 2015, it helps aspiring entrepreneurs change the world with their ideas. The accelerator has supported over 200 entrepreneurs since its inception. It has enabled the launch of ground-breaking companies across the world, from Southampton and London, to Silicon Valley and Tanzania.

International partnerships

International partnerships are a key contributor to our Faculty’s strategy, with a global outlook ensuring that we are able to build on our strengths and capitalise on the opportunities ahead.

The University established a branch campus for engineering within the EduCity development in Iskandar, Malaysia, in 2012. Our split campus (UK and Malaysia) degree programmes offer the chance to gain a unique ‘Southampton’ education for the first two years in Malaysia combined with the final two years at a world-class research-intensive university in the UK.

The Optoelectronics Research Centre, part of the Zepler Institute for Photonics and Nanoelectronics, partnered with Nanyang Technological University (NTU, pictured below) in 2014 to launch The Photonics Institute in Singapore.

The $80M fibre optic research manufacturing focuses on research involving light technology, such as those found in fibre-optic cables, lasers and consumer products like DVD/Blu-ray devices or remote control devices.

In 2020, the Faculty is seeking to establish a Joint Education Institute (JEI) in the area of Ocean Engineering with Harbin Engineering University (HEU) in China. A JEI is an international education collaboration mechanism approved by the Chinese government for the joint delivery of education programmes.

The Faculty is proposing four new double-award degree programmes to be delivered entirely in China.
Infrastructure
Infrastructure is at the heart of our ability to deliver sustainable excellence and innovation in education, research and enterprise. The Faculty is based in over 25 buildings that represent a significant proportion of the University’s campus footprint. It is also home to several advanced research facilities, including:

1. The National Infrastructure Laboratory on Boldrewood Innovation Campus houses five new engineering laboratories including a 30m x 15m large structures testing laboratory, and a cutting-edge geotechnical centrifuge.

2. The University of Southampton Towing Tank on Boldrewood Innovation Campus is the largest University facility of its kind in the UK. With dimensions of 138m x 6m x 3.5m and a maximum carriage speed of 12m/s, this world class facility is ideally suited to support teaching, research and commercial clients, not just for conventional ship model testing but across the aerospace, energy, and transportation sectors.

3. Our wind tunnel complex includes the RJ Mitchell Wind Tunnel on Highfield Campus, which has been at the forefront of aerodynamics research for more than 35 years.

4. Our large anechoic chamber forms part of the Rayleigh Laboratories, and is one of the largest in the country. The Faculty’s renowned Institute of Sound and Vibration Research (ISVR) was formed in 1963.

5. The Zepler Institute Cleanrooms, based in the Mountbatten Building on Highfield Campus, is the largest multidisciplinary cleanroom of its type in the UK. It offers world-class facilities and expertise in nanoelectronics, optoelectronics, quantum technologies, device physics and biotechnology.

6. The UK National Crystallography Service (NCS) is a world-leading, unique facility providing a service and researching in chemical crystallography. Based in the School of Chemistry, it focuses on the technique of single crystal diffraction applied to samples submitted by UK Chemistry, and related, disciplines.

7. The Tony Davies High Voltage Laboratory (TDHVL) is a world class centre for research into dielectric materials and insulation systems, as well as high voltage and related phenomena. The lab houses state-of-the-art facilities and is supported by a specialist engineering team who are all actively involved in internationally-leading research. It is also a commercial testing house and offers a consultancy service.
Our Schools and Research Institutes continue to make new discoveries, find new perspectives and change people’s lives through our education, research and enterprise.

Chemistry
The School of Chemistry has a very strong research reputation and a vibrant community. Chemistry is located on the Highfield Campus and academic staff are organised under several research theme areas: Chemical Biology, Diagnostics & Therapeutics, Computational Systems, Electrochemistry, Functional Inorganic, Materials & Supramolecular Chemistry, Magnetic Resonance and Organic Chemistry: Synthesis, Catalysis and Flow, as well as two cross-cutting sections, Education and Characterisation and Analytics, that support work across the School.

The School has hosted the UK National Crystallography Service for over 20 years and boasts some of the world’s leading lab-based experimental X-ray diffraction facilities.

Electronics and Computer Science
Electronics and Computer Science (ECS) is a leading university department of its kind in the UK, with an international reputation for world-leading research across computer science, electronics, and electrical engineering.

Research takes place in a multidisciplinary, collaborative environment, organised across globally important research groups and national research centres. With researchers from many different subject backgrounds, the research culture in ECS is fast-changing and dynamic.

Examples of technologies in which ECS research has been fundamentally transformative in recent years include agent technologies, digital libraries, environmental modelling, e-science, high voltage engineering, machine learning, spintronics, technology-enhanced learning and web science.

Today, the School is driving advancing in its disciplines through 10 research groups as well as the collaborative Centre for Machine Intelligence, Centre for Health Technologies, Centre for Internet of Things and Pervasive Systems and the IT Innovation Centre. ECS also incorporates two doctoral training centres – in web science and artificial intelligence.

The School’s facilities include the Tony Davies High Voltage Laboratory, the Printed Electronics and Materials Laboratory, the Centre for Hybrid Biodevices, the Cyber Security Laboratory, the David Barron Computing Laboratory and the Arthur Brunnschweiler Teaching Laboratory.

Engineering
The School of Engineering represents the largest and most diverse engineering grouping in the UK, with expertise that looks deep below the Earth’s crust, reaches into space, and encompasses everything in between.

The School includes the Departments of Aeronautical and Astronautical Engineering, Civil, Maritime and Environmental Engineering, Mechanical Engineering and the Institute of Sound and Vibration Research.

The School’s world-leading facilities include the new UK Collaboration for Research on Infrastructure and Cities (UKCRIC) National Infrastructure Laboratory and Hydrodynamics laboratory on the Boldrewood Innovation Campus, Acoustic Chambers, Wind Tunnels and µ-VIS microtomographic imaging suite on Highfield Campus.
The Boldrewood Innovation Campus has been largely funded by external grants and contracts, which is an indication of strong external confidence and esteem in the School’s activities. The site includes the Lloyd’s Register Group Technology Centre.

Research strengths include pioneering activities in the fields of autonomous vehicles, biomedical technologies, energy storage, rail infrastructure and resilience, manufacturing and materials and space technology.

The School’s teaching expertise is combined with a practical approach to offer students the best possible start to their career. All courses offer students the chance to put theory into practice at the School’s state-of-the-art facilities, with many of the students’ innovative engineering projects showcased at an annual Design Show.

Physics and Astronomy

The School of Physics and Astronomy spans a history of discovery of almost 60 years, working at the forefront of new developments and inspiring the next generation of excellent physicists.

The School’s world-class facilities include latest-generation oscilloscopes, a rooftop observatory equipped with two high-quality telescopes and CCD detectors, a specialist photonics laboratory with research-grade laser equipment.

Our researchers publish over 400 papers annually and are part of the Science and Engineering Consortium, the most powerful cluster of research-intensive universities in the UK.

Physics and Astronomy is world-renowned for the work of its research groups in: Astronomy; Space Environment Physics; Quantum, Light and Matter; High Energy Physics; and the Southampton Theory, Astronomy and Gravitation (STAG) Research Centre.

Zepler Institute for Photonics and Nanoelectronics

The Zepler Institute for Photonics and Nanoelectronics is a multidisciplinary research centre with the UK’s best set of nanoelectronics and photonics fabrication capabilities, and is home to the world-leading Optoelectronics Research Centre (ORC).

The Zepler Institute’s nanotechnology research covers a diverse set of novel devices and materials, and includes the creation and characterisation of nanoelectronic systems and the study of bio-inspired devices, that borrow evolutionary solutions from the natural world and applies them in the design and creation of emerging technologies.

Current research topics include functional materials, memristive devices, and systems for unconventional computing architectures and biomedical applications.

In recognition of our world-leading expertise in photonics and fibre optic technology, and the many decades of inspired innovation by the ORC to provide solutions for real-life problems, the University of Southampton has been awarded a prestigious Queen’s Anniversary Prize for Higher and Further Education.

Research Institutes

The Faculty of Engineering and Physical Sciences is also home to the Web Science Institute and the Southampton Marine and Maritime Institute.

The Web Science Institute (WSI) brings together world-leading interdisciplinary expertise to tackle the most pressing global challenges facing the World Wide Web and wider society today. It is necessarily interdisciplinary, as much about social and organisational behaviour, as about the underpinning technology.

It provides insight and intelligence that can lead policy, business strategy, civic engagement and individual choices to meet the social and technical challenges posed by Web technologies.

Southampton Marine and Maritime Institute (SMM) is a unique, internationally recognised centre of excellence for research, innovation and education. Its work spans both the natural ocean environment (marine) and human use of the sea (maritime). Knowledge generated through its collaborative research is applied in teaching to create the next generation of marine and maritime professionals.
THE UNIVERSITY AND THE REGION
Our main Highfield Campus is home to state-of-the-art teaching and research facilities, as well as two of the UK’s leading arts venues, Nuffield Southampton Theatres and Turner Sims Southampton.
THE ROLE

DEAN OF ENGINEERING AND PHYSICAL SCIENCES

The Dean has three primary duties:

- To lead the continued success of the Faculty, playing a pivotal role in the strategic development and operation of the Faculty’s education, research and enterprise through the effective leadership of staff and management of resources in pursuit of University and Faculty strategic goals.
- To be responsible, as a senior member of the University, for the strategic direction, development and performance of the University, taking on specific institution-wide responsibilities.
- To represent the University and Faculty externally for the purposes of growing income, enhancing reputation and contributing to the University’s development activities.

Responsibilities and accountabilities

- Work with the President & Vice-Chancellor and the executive team to deliver the University vision and academic mission through the achievement of strategic priorities.
- Contribute to the effectiveness of the University’s executive team through personal contribution and leadership style and by ‘living’ the University’s core values and principles.
- Develop and deliver the faculty’s business plan for excellence and achieve the agreed Faculty performance targets.
- Ensure, within the limits of available resources, that effective arrangements exist within the Faculty to enable academic excellence in research and education within the framework set by the University in pursuit of the Faculty’s business plan.
- Establish and maintain a high performing, inclusive and respected senior leadership team and oversee the management, performance and development of the Faculty’s academic, research and technical staff.
- Deliver a world-class student experience, ensuring the provision of outstanding education and support services.
- Develop and maintain the Faculty’s national and international reputation by fostering strong strategic relationships with key stakeholders that enhance the Faculty’s leading role in education, research and enterprise.
- Identify and exploit new opportunities to grow sources of income for the Faculty, including proactively developing Faculty relations with alumni philanthropists, and other key stakeholders, encouraging other leaders within the Faculty to develop such relationships.
- Accountable for promoting a culture of equality, inclusion and respect throughout the faculty.

Person specification

Experience, knowledge and skills

- Higher degree, PhD or professional doctorate in a relevant academic area.
- A proven track record of outstanding academic achievement, of international standing, in a field of expertise relevant to the Faculty, potentially recognised by membership of prestigious relevant organisation.
- Record of providing strategic and visionary direction and maximising performance in a large complex organisation.
- Record achieving performance targets and leading others to meet their performance targets.
- Deep understanding of higher education and government policy in the UK, and current and emerging global trends, challenges and opportunities.
- Financial acumen with the ability to increase or develop additional sources of income through research and enterprise activities.

Leadership Competences

Planning and organising

- Translates strategic vision into reality, designing frameworks to turn plans into actions.
- Defines goals and priorities, developing operational plans, delegating appropriately and holding people to account.
- Thinks and operates at a strategic level to maximise opportunities, articulating and pursuing a long-term vision whilst meeting daily demands.
Problem solving and initiative

- Thinks analytically and creatively to solve complex strategic and organisational problems.
- Identifies risks and options, developing strategies to manage and mitigate them.
- Analyses complex data/information easily to inform decisions and make judgements.
- Responds to change positively, demonstrating agility and flexibility particularly when problem solving.
- Confidence and courage to take on challenges, own and implement difficult decisions and be accountable for actions.

Teamwork and culture

- Inspires and leads diverse teams, empowering and supporting people, creating effective organisational structures and managing through influence as well as through executive authority.
- Establishes and sustains both a customer service and a high performance management culture.
- Actively encourages multi-disciplinary and cross-functional working to achieve shared objectives.
- Inspires a culture that shares credit for success and failure, rewards initiative, encourages risk-taking and cultivates a climate of shared decision-making.
- Organisationally sensitive with a genuine interest in people at all levels.
- Personal commitment to excellence, widening participation, diversity and inclusion.

Communicating and influencing

- Articulates ideas and messages with clarity and consistency in a variety of ways to diverse audiences.
- Builds strong relationships and support for initiatives, working collaboratively to align activity and resources to deliver faculty objectives.
- Cultivates strong networks and build links with the wider community, business, industry and other stakeholders.

Personal attributes

- Intellectual capacity, stamina and agility to deal with a broad span of duties, to gain the respect of a wide range of people and to balance internal and external demands.
- Personal presence and able to project and inspire confidence at all levels, fostering a community in which students, staff, alumni and partners feel motivated to participate.
- High level of emotional intelligence with excellent judgement.
- Resilient, adaptable and clear minded, accepting of differing views whilst achieving results.
- Instinctive understanding of what constitutes excellence and what it takes to achieve and sustain it with a determination constantly to seek improvement.
- Alignment with the University’s values of excellence, creativity, integrity and community.

How To Apply

For more information and details of how to apply, please email Sarah Hollowbread, Director of HR (Service Delivery), at seniorrecruitment@soton.ac.uk.

The closing date for receipt of applications is midday on Friday 21 February 2020.

Terms of appointment

Competitive remuneration, commensurate with the responsibilities of the role.

Important dates

Following a long list meeting of the Search Committee, successful candidates will be invited to attend an Engagement Day with members of the Faculty on Monday 16 March 2020.

Interviews are currently scheduled to take place on Friday 3 April 2020.