

The appliance  
of science.  
Alternatives  
to medicine



Are you thinking of applying for Medicine? At the University of Southampton we receive over 5,000 applications each year for around 250 places. This means that 1 in 20 who apply will be successful. Competition for places is extremely high at most universities and you may not have thought about other possibilities and opportunities to continue and develop your passion for science subjects.

## Health Science Subjects:

### **BSc Healthcare Science (Audiology)**

Audiologists identify and assess hearing and balance problems, including hearing loss, tinnitus, vertigo, dizziness, hyperacusis as well as difficulties with posture, movement and stable vision. Audiologists work with people with these problems, and their families, to help them improve the quality of their lives by providing, for example, advice, support, technology (often state-of-the-art digital technology), rehabilitation, counselling, exercises and training. Audiologists are involved in the development of local and national services, research and teaching, and they may choose to specialise in a particular area, such as hearing rehabilitation in adults, paediatrics, balance impairment, tinnitus or cochlear implants.

### **BSc (Hons) Healthcare: Management, Policy and Research**

This innovative and pioneering course has been developed in response to a need for more highly skilled leaders, policy makers and researchers in healthcare. Healthcare systems are highly complex environments and this degree will give you the skills to understand and solve problems and make decisions around healthcare delivery and design. The key objective of this programme is to ensure that you are able to use analytical and research techniques in order to evaluate and go on to influence the effectiveness, efficiency and equity of health policies and healthcare systems. During the degree you will consider questions such as: What shapes healthcare system design? What are the social science underpinnings needed to study healthcare systems? How can healthcare be made safer and more efficient? How does research inform healthcare policy development? How can we use data about health outcomes to inform decision making? How can we lead and manage innovation and change in healthcare settings?

### **BSc Podiatry**

A podiatrist manages disease and disorder of the lower limb, undertaking treatments that involve the foot and ankle. The foot is a highly complex structure that can develop problems affecting a patient's overall health and well-being. Successful podiatry course graduates should be skilled in the diagnosis and management of foot disorders and are able to carry out a range of treatments, for patients of all age groups.

### **BSc Physiotherapy**

Physiotherapy degree graduates work with people of all ages to treat physical problems caused by illness, accident or ageing. Physiotherapy is a dynamic healthcare profession that uses a physical approach to promote, maintain and restore physical, psychological and social wellbeing. Physiotherapists see movement as central to the client's health and wellbeing, and work with the client to improve their movement and comfort through health promotion, preventative healthcare, treatment and rehabilitation.

### **BSc Healthcare Science (Cardiovascular and, Respiratory and Sleep Science)**

Science is driving the modern NHS with new and advanced technologies constantly emerging to aid patient care. As a practicing healthcare science degree graduate you will be at the forefront of technological advances which aid the diagnosis and treatment of cardiological and respiratory conditions. The BSc healthcare science degree at Southampton will help you develop scientific knowledge and practical skills which will enable you to perform and interpret diagnostic tests on patients. In each area you are likely to work with babies and young children, adolescents, adults and older people with suspected illness.

### **BSc Occupational Therapy**

Occupational therapists help people to regain lost skills and live life to the best of their ability. When people become ill, disabled or lack opportunities, they may lose the ability to carry out everyday activities. As an occupational therapist you will assess the physical, mental and social needs of the individual, and work with them to identify the best way to help them achieve their personal goals and independence. Activity is seen as essential to health and achieved through the use of activities that are meaningful to the individual. Skills are regained and participation in everyday life is enhanced. Occupational therapy course graduates can make valuable differences to people's lives and is a challenging and dynamic professional to join.

## Bioscience Subjects:

### Biochemistry

From DNA to proteins, from single molecules to cells, biochemistry answers the ultimate questions about how living organisms work. Biochemistry, the molecular approach to biological systems, is at the forefront of far-reaching developments in medicine and biotechnology, and is a source of practical benefit for mankind. As a result of advances in biochemistry we can manipulate genes and modify proteins, and we know the complete sequence of the human and over 400 other genomes. Modern biochemistry uses chemical and molecular approaches to address biological questions and to solve biomedical problems. It provides the foundation for many techniques that are used in a wide range of biological subjects including pathology, pharmacology, physiology and genetics. Our staff are involved in researching the molecular basis of disease, the control of gene transcription and protein translation, cell signalling, membrane proteins, DNA structure and drug development, as well as other areas of biochemistry.

### Chemistry

The aim of the BSc Chemistry programme at Southampton is to enhance your sense of enthusiasm for chemistry and to involve you in an intellectually stimulating experience of learning in a supportive environment. We will provide you with a sound background in all aspects of chemistry as part of a rounded scientific education, as well as comprehensive training in practical chemistry and an appreciation of the importance of the discipline in different contexts. You will be well placed to join the multiskilled workforce of the future, working to meet some of the Grand Challenges facing all of us: protecting the worldwide water supply; carbon dioxide capture and utilisation; clean energy; sustainable manufacture; and personalised healthcare.

### Marine Biology

Marine biology embraces the study of all forms of life in the oceans, covering a broad range of topics, from the global distribution of marine organisms to individual molecules that drive metabolic and ecological processes. As well as studying the ecology of individual or groups of species in their habitat, marine biologists use plants and animals to understand complex processes in the marine environment, including man's impact on the sea through pollution, fishing and the effects of climate change. The programme at Southampton covers all aspects of the marine biosphere, specifically in relation to the chemical and physical aspects of oceanography, from the tropics to the deep ocean.

### Natural Sciences

Science is becoming increasingly multidisciplinary, with employers and governments seeking scientists with skills spanning traditional subject definitions. At Southampton we have developed the Natural Sciences programme for candidates who are looking for an adaptable degree course that provides academic challenge, diversity and flexibility, while maintaining the intellectual rigour and excellent education expected by candidates and their future employers. The course allows you to pursue a combination of two or three science subjects, with all your chosen subjects being studied in each year of the degree. Maintaining learning in two or more key sciences at all levels of your degree provides you with interdisciplinary training that reflects the multifaceted nature of many aspects of modern science, in terms of both research and industrial application.

### Oceanography

Oceanography is the science of exploration, offering insights into physical, chemical and biological processes throughout the marine environment. Studying oceanography will allow you to contribute to the future use and care of the ocean system. We actively involve undergraduates in our research output and regularly publish student work in scientific journals of international standing. Beyond a common core of basic marine science, you may decide to specialise either in chemical, physical or geological aspects of oceanography or to follow a broader general pathway that gives you a fully interdisciplinary approach to ocean science. You will develop the scientific knowledge and challenging skills required to fully understand marine processes from waves, tides and ocean currents, through to sediment transport, the chemical composition of seawater, phytoplankton blooms, fisheries and marine mammals.

## Engineering Subjects:

### Acoustical Engineering

Dolphins, jet engines, concert and sports halls, sound reproduction, environmental assessment, medical ultrasound, motion sickness, car refinement, wind turbines: put your maths and physics into action, and take a look at acoustical engineering. At Southampton Acoustical engineering is taught in the Institute of Sound and Vibration Research (ISVR), one of the world's leading centres for research, teaching and consultancy in acoustics. Acoustical engineering demands a remarkable breadth and depth of study, drawing on disciplines such as mechanics, materials, manufacturing, electronics and signal processing. Consequently, acoustical engineering is an excellent degree choice for those who want to open up a broad range of scientific and engineering career options on graduation.

### Aeronautics & Astronautics

The sky is not the limit, it is just the beginning. Aeronautics and astronautics encompasses a broad range of disciplines within the field of aerospace engineering. Aeronautics and Astronautics courses cover applications to the specification, design and construction of aircraft, engines, satellites and other spacecraft. At Southampton the wide range of facilities include world-class wind tunnels, state-of-the-art flight simulators, propulsion test cells, astronautics facilities and a student workshop. Strong links with the aerospace and race car industries provide excellent opportunities for work placements and job prospects, and many of our students gain sponsorship.

### Civil Engineering

Civil engineering applies science, mathematics, design and creativity in order to solve problems of critical importance to society – today and in the future – across the construction, maintenance and management of infrastructure. We tend to take for granted the buildings we live and work in, the roads, railways and airports that allow us to travel, the water we use. It is professional civil engineers who make all this possible, and who are called on to find solutions to the major challenges facing the world in the future, such as the effects of climate change and sea-level rise, finding sustainable sources of energy and dealing with congestion.

### Electrical Engineering

Electrical engineering concerns anything that involves electrical power, from the electromagnetics of superconducting systems to the principles of power generation and transmission, and the development of more efficient and sustainable energy sources. Energy is one of today's biggest global challenges, with energy generation and supply, coupled with environmental factors, placing future energy needs and provision at the top of government agendas in every country. The programmes at Southampton are broad, based on solid physical and mathematical understanding, and will provide you with the analytical skills to design and develop the technology of tomorrow.

### Electromechanical Engineering

Electromechanical engineering is concerned with systems ranging from micro-machines to powerful industrial robots, all relying on mechanical elements, electrical power, sensing and control to produce a useful device. As electrification of our world continues, many engineering applications today, from the humble motor to robots and electric vehicles, harness the ability to convert electrical power into mechanical motion and vice versa. At Southampton our course is a mixture of mechanical and electrical engineering and also entails computer programming and control engineering.

### Mechanical Engineering

Mechanical engineering encompasses a broad range of disciplines. It is vital to every aspect of our daily lives – you can see it at work all around you. Mechanical engineering is a challenging and exciting subject that covers a wide range of technical activities, including the design of machines, conversion of energy, manufacturing processes, medical engineering and microsystems technology.

Using computer-aided design and manufacturing, mechanical engineers research, develop, design, manufacture and test tools, engines, machines and other mechanical devices for a wide range of applications, from the automotive and aerospace fields to biomedical and microsystems.

### Ship Science

Ship science studies the engineering behind vehicles and structures that use the ocean for transport, recreation and harnessing marine resources. The professional naval architect or marine engineer is responsible for the design, construction and repair of cruise liners, high-speed ferries, container ships, oil tankers, sailing yachts, luxury motor craft, lifeboats, hydrofoils, hovercraft, submarines and underwater vehicles, as well as fixed or floating offshore structures. At Southampton, maritime design projects will form an integral part of your study, with opportunities to become involved in leading-edge research. Recent projects include the design of a vessel to compete in Weymouth Speed Week, yacht design innovations for the Volvo Ocean Race, kite-powered ships and using inspiration from nature for performance enhancements to autonomous underwater vehicles (AUVs).