



Department of Life Sciences

Undergraduate studies in

Biological Sciences

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Important information

The programme information published in this brochure was correct at time of going to print (May 2022) and may be subject to change. Prospective students are advised to check the definitive programme information, including entry requirements, that is available on our website before making an application, to ensure that the programme meets their needs.

Welcome

Welcome to the Department of Life Sciences, a world-class research and education centre based here at Aberystwyth University.

We provide an excellent learning environment for both your academic and personal development, with state-of-the-art facilities and generous scholarships. Your course will be brought to life by our committed and inspiring lecturers. Much of our teaching is led by the cutting-edge research interests of our staff.

In the Department of Life Sciences we are able to offer you a wide range of learning opportunities, including interactive lectures and seminars, laboratory classes, small group tutorials, and field courses. The flexibility of being able to select from a range of diverse modules means you can tailor your course to your individual interests. You will be assessed in a variety of ways, including exams, laboratory reports, presentations, and essays, all of which are designed to enhance your subject-specific, personal, and transferable skillsets.

We are proud that the majority of our courses in the Biological Sciences are accredited by the Royal Society of Biology or the British Association of Sport and Exercise Science. As well as highly satisfied students we have always had a strong track record of producing highly employable graduates.

Aberystwyth lies on the shores of Cardigan Bay on the west coast of Wales, set in stunning natural surroundings. The locality offers a fine coastline with expanses of rolling moorland and wooded valleys immediately inland. In the Department of Life Sciences our mission is to improve the health and well-being of people through research, education and engagement activities. We believe this depends on delivering a healthy environment, healthy plants and animals, and healthy businesses.

Professor Iain Donnison
Head of Department



Our courses

Single honours

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Foundation

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Integrated Masters

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We also offer:

- Agriculture (BSc, 3 years)
- Agriculture (top-up scheme) (BSc, 1 year)
- Agriculture (Foundation) (FdSc, 2 years)
- Agriculture (MAg, 4 years)
- Agriculture with Animal Science (BSc, 3 years)
- Agriculture with Animal Science (MAg, 4 years)
- Agriculture with Business Management (BSc, 3 years)
- Animal Behaviour (BSc, 3 years)
- Animal Science (BSc, 3 years)
- Ecology (BSc, 3 years)
- Equine and Veterinary Bioscience (BSc, 3 years)
- Equine Science (BSc, 3 years)
- Equine Studies (Foundation) (FdSc, 2 years)
- Equine Studies (top-up scheme) (BSc, 1 year)
- Marine and Freshwater Biology (BSc, 3 years)
- Marine and Freshwater Biology (Mbiol, 4 years)
- Plant Biology (BSc, 3 years)
- Wildlife Conservation (BSc, 3 years)
- Zoology (BSc, 3 years)
- Zoology (Mbiol, 4 years)

Biochemistry

BSc (Hons)

With integrated year in industry

(C701)

During your Biochemistry degree at Aberystwyth, you will examine the structure and functions of the molecules that make up a cell and understand the way in which they interact in living processes. Our lecturers are active researchers, with first-hand experience of drug discovery, the investigation of diagnostic techniques, active synthesis of compounds and more.

Our Biochemistry degree places special emphasis on the practical skills required by employers in the pharmaceutical and biotechnology industries. During your studies, you will explore the techniques that have revolutionised the study of cell biology, biological chemistry, metabolism and molecular genetics, through expert tuition in scientific protocol and hands-on lab work. You will also work on tasks designed to emulate the requirements of professional practice in biochemistry.

Opportunities for Biochemistry students at Aberystwyth include:


- application of molecular techniques including DNA extraction, sequencing and analysis
- gel electrophoresis for the separation and functional analysis of proteins
- biophysical characterisation of enzyme-catalysed reaction kinetics and thermodynamics
- extensive research and teaching labs equipped with the latest equipment, including bioimaging facilities, high-throughput DNA sequencing, proteomics, metabolomics and spectroscopic platforms.


Employability

As a graduate of this degree, you will have developed the skill set needed to work safely and independently in both research and industrial laboratory environments. As such, you will be well prepared for careers in the pharmaceutical and biotechnology industries. Many of our graduates also follow careers in education or pursue further studies at Masters or PhD level.

Key Facts

 Degree type: BSc.

 UCAS Code: C700 (C701 with integrated year in industry).

 Duration: 3 years (C701 is 4 years).

Module list

Below is an indicative list of modules that you may study on this course.

First year:

- Biochemistry and the Cellular Basis of Life
- Comparative Animal Physiology
- Evolution and the Diversity of Life
- Exploring Genetics
- Metabolism
- Microbial Diversity *
- Molecular Biochemistry
- Molecular Laboratory Skills
- Study and Communication Skills *
- The Green Planet *

Second year:

- Applied Molecular Biology and Bioinformatics
- Cell and Cancer Biology
- Practical Skills for Biochemists
- Proteins and Enzymes
- Research Methods *

Final year:

- Research Project *
- Molecular Pharmacology
- Bioinformatics and Functional Genomics
- Biotechnology.

See our website for the optional modules you may select to develop your specialist interests.

* also available partially or entirely through the medium of Welsh.

Accredited by:



Biology

BSc (Hons)

With integrated year in industry

(C102)

On our Biology degree you will study biology on all scales, ranging from environmental to whole organism and cellular.

You will focus on the sequencing of whole genomes, analysis of their evolution and investigation of individual gene function, using cutting-edge analytical approaches. You will also consider the ethical dilemmas being posed by advances in biological knowledge, for example, in controversial disease treatments or reproductive medicine. Our aim is to develop your knowledge and experimental skills as well as to encourage you to think independently, creatively and critically.

Opportunities for Biology students at Aberystwyth include:

- application of molecular techniques including DNA extraction, sequencing and analysis
- extensive research and teaching labs equipped with the latest state-of-the-art equipment, including bioimaging facilities, high-throughput DNA sequencing, proteomics, metabolomics and spectroscopic platforms
- advanced analytical expertise in bioinformatics, GIS, climate niche modelling and epidemiology supported by access to high performance computing facilities.

Employability

Recent graduates have entered employment with education authorities, the Environment Agency, conservation organisations, pharmaceutical companies, the NHS, sea-life centres, public health laboratories and the water industry, to give a few examples.

Key Facts



Degree type: BSc.



UCAS Code: C100 (C102 with integrated year in industry).



Duration: 3 years (C102 is 4 years).

Module list

Below is an indicative list of modules that you may study on this course.

First year:

- Biochemistry and the Cellular Basis of Life
- Ecology *
- Evolution and the Diversity of Life
- Exploring Genetics
- Metabolism
- Microbial Diversity *
- Molecular Laboratory Skills
- Study and Communication Skills *
- The Green Planet *.

Second year:

- Chromosome Dynamics
- Climate Change: Plants, Animals and Ecosystems
- Evolution and Molecular Systematics
- Research Methods *.

Final year:

- Research Project *
- Biotechnology
- Frontiers in Plant Science.

See our website for the optional modules you may select to develop your specialist interests.

* also available partially or entirely through the medium of Welsh.

Accredited by:



Biology and Climate Change

BSc (Hons)

With integrated year in industry

(FC72)

The Biology and Climate Change degree explores creative ways of responding to the challenges and opportunities of the current climate crisis, and will equip you with relevant subject-specific knowledge alongside the multi-disciplinary, interpersonal skills and attributes needed to create a more just and sustainable world. If your intention involves having a positive impact on the world, this course will set you securely on that rewarding journey.

On this degree, you will learn about the science underpinning climate, and how humans have changed these processes in recent times. You will explore the impacts of climate change on biodiversity at the level of species, habitats and ecosystems, and the scope for organisms and populations to evolve in the light of this threat. By working across disciplines, you will learn the need for both scientific research and governance in tackling these important issues.

Opportunities for Biology and Climate Change students at Aberystwyth include:

- the great variety of local habitats and ecosystems, both marine and terrestrial, and ideal locations to study the impacts of climate change on biodiversity, and the scope for mitigation
- the chance to carry out field research, both locally and abroad
- the option of a range of overseas courses
- the chance to work with established academic researchers who work on various aspects of the past, present and future effects of global change on natural ecosystems.

Employability

Our graduates are well-placed for roles in climate change management, adaptation and mitigation and careers in related areas, such as environmental education and consultancy or conservation.

Key Facts



Degree type: BSc.



UCAS Code: FC71 (FC72 with integrated year in industry).



Duration: 3 years (FC72 is 4 years).

Module list

Below is an indicative list of modules that you may study on this course.

First year:

- Climate and Climate Change
- The Biosphere
- Introduction to Conservation
- The Green Planet *
- Evolution and Diversity of Life
- Ecology *
- Microbial Diversity *
- Study and Communication Skills *.

Second year:

- Climate Change: Plants, Animals and Ecosystems
- The Governance of Climate Change
- Research Methods *.

Final year:

- Research Project *
- Global Biodiversity Conservation.

See our website for the optional modules you may select to develop your specialist interests.

* also available partially or entirely through the medium of Welsh.



Biomedical Sciences (Nutrition, Health and Exercise)

BSc (Hons)

With integrated year in industry

(B991)

This degree provides a broad understanding of the scientific basis of human biology and explores how nutrition and exercise can contribute to the prevention and treatment of medical conditions.

Taught by experts in their field, you will study modules in the subject areas of cell and molecular biology, human anatomy and physiology, biochemistry, pharmacology, microbiology, immunology, nutrition, metabolism, bioinformatics and genetics. You will develop an understanding of research methods and the ability to apply this to new and interesting topics. There is a particular focus on laboratory skills throughout the degree which will prepare you for work in the biomedical sciences.

Opportunities for Biomedical Sciences students at Aberystwyth include:

- access to extensive research and teaching labs equipped with the latest equipment, including bioimaging facilities, high-throughput DNA sequencing, proteomics, metabolomics and spectroscopic platforms
- use of state-of-the-art physiological, biomechanical and psychological equipment and laboratories.

Employability

Graduates may pursue careers in clinical and community healthcare, clinical genetics laboratories, clinical trials and the regulatory sector, sales and marketing related to healthcare and diagnostic products, diagnostic pathology and clinical laboratories, education, research and development for the pharmaceutical industry, to name a few.

Module list

Below is an indicative list of modules that you may study on this course.

First year:

- Biochemistry and the Cellular Basis of Life
- Exploring Genetics
- Fundamentals of Human Nutrition
- Human Anatomy and Kinesiology
- Human Physiological Systems
- Metabolism
- Microbial Diversity
- Molecular Laboratory Skills
- Study and Communication Skills *

Second year:

- Applied Molecular Biology and Bioinformatics
- Research Methods *
- Sport and Exercise Physiology.

Final year:


- Molecular Pharmacology.
- Research Project *
- Sport and Exercise Nutrition.


See our website for the optional modules you may select to develop your specialist interests.

* also available partially or entirely through the medium of Welsh.

Key Facts

 Degree type: BSc.

 UCAS Code: B990 (B991 with integrated year in industry).

 Duration: 3 years (B991 is 4 years).

Genetics

BSc (Hons)

With integrated year in industry

(C401)

Our Genetics degree capitalises on the Department of Life Sciences' long-established strengths in genetics research. The Institute houses facilities for DNA sequencing and bioimaging, the National Plant Phenomics Centre, and high-performance computing for bioinformatics. Staff with expertise in these approaches will guide your learning on the Genetics degree.

As a Genetics graduate, you will be able to develop a career that explores the most current topics in the sphere of genetics. The course content ranges from the fundamentals of evolution to the frontiers of modern genetics, including medical genomics and bioinformatics. You will study cancer biology, chromosome genetics, gene expression and development, evolution and population genetics, and biotechnology. You will also receive tuition in scientific protocol and the correct scientific procedures for recording, interpreting and reporting data.

Opportunities for Genetics students at Aberystwyth include:


- the application of molecular techniques including DNA manipulation, sequencing and analysis
- access to extensive research and teaching labs equipped with the latest state-of-the-art equipment, including microscopy facilities, high-throughput DNA sequencing, proteomics, metabolomics and spectroscopic platforms
- the option of a week-long residential field course in Pembrokeshire.


Employability

Our Genetics degree will provide you with plenty of hands-on lab work, and thus the skills to take up a professional career in genetics within healthcare, industry or universities. Potential opportunities include clinical genetics, biomedical genetics, biotechnology, forensic research, genetic counselling, conservation genetics and plant breeding. This scheme also frequently leads to postgraduate research at Masters and PhD level.

Key Facts

 Degree type: BSc.

 UCAS Code: C400 (C401 with integrated year in industry).

 Duration: 3 years (C401 is 4 years).

Module list

Below is an indicative list of modules that you may study on this course.

First year:

- Biochemistry and the Cellular Basis of Life
- Ecology *
- Evolution and the Diversity of Life
- Exploring Genetics
- Metabolism
- Microbial Diversity *
- Molecular Laboratory Skills
- Study and Communication Skills *
- The Green Planet *

Second year:

- Applied Molecular Biology and Bioinformatics
- Cell and Cancer Biology
- Chromosome Dynamics
- Evolution and Molecular Systematics
- Research Methods *

Final year:

- Research Project *
- Bioinformatics and Functional Genomics
- Biotechnology
- Molecular Biology of Development.

See our website for the optional modules you may select to develop your specialist interests.

* also available partially or entirely through the medium of Welsh.

Accredited by:



Genetics and Biochemistry

BSc (Hons)

With integrated year in industry

(CC48)

This degree explores the interface between genetics – with its almost limitless potential to help understand human health and disease – evolution and the diversity of living things. Biochemistry provides a mechanistic understanding of how genes dictate the biology of an organism.

Hallmarks of this degree are the close integration of genetics and biochemistry to understand the molecular genetics of health and disease, and the prioritisation of the practical skills in demand by research and industry. During your studies, you will develop a solid foundation of understanding in genetics and biochemistry, covering aspects such as human genetics, gene expression, developmental and cancer biology, biotechnology, genetic engineering and pharmacology. You will also receive tuition in scientific protocol and the correct experimental methodology for recording, interpreting and reporting a variety of data. At the conclusion of your studies, you will have developed the skills needed to work in a range of professional laboratory environments.

Opportunities for Genetics and Biochemistry students at Aberystwyth include:

- the application of molecular techniques including DNA extraction, sequencing and analysis
- gel electrophoresis for the separation and functional analysis of proteins
- biophysical characterisation of enzyme-catalysed reaction kinetics and thermodynamics
- extensive research and teaching labs equipped with the latest equipment, including bioimaging facilities, high-throughput DNA sequencing, proteomics, metabolomics and spectroscopic platforms.

Employability

This degree offers you an avenue into employment in the growth areas of biomedicine, forensic science, DNA profiling (of humans, animals and plants), clinical cytogenetics and genetic counselling, biotechnology and food production.

Key Facts



Degree type: BSc.



UCAS Code: CC47 (CC48 with integrated year in industry).



Duration: 3 years (CC48 is 4 years).

Module list

Below is an indicative list of modules that you may study on this course.

First year:

- Biochemistry and the Cellular Basis of Life
- Comparative Animal Physiology
- Evolution and the Diversity of Life
- Exploring Genetics
- Metabolism
- Microbial Diversity *
- Molecular Biochemistry
- Molecular Laboratory Skills
- Study and Communication Skills *
- The Green Planet *.

Second year:

- Applied Molecular Biology and Bioinformatics
- Cell and Cancer Biology
- Chromosome Dynamics
- Practical Skills for Biochemists
- Proteins and Enzymes
- Research Methods *.

Final year:

- Research Project *
- Biotechnology
- Molecular Biology of Development
- Bioinformatics and Functional Genomics.

See our website for the optional modules you may select to develop your specialist interests.

* also available partially or entirely through the medium of Welsh.

Accredited by:



Human Biology and Health

BSc (Hons)

With integrated year in industry

(C195)

Human Biology and Health combines two areas of research and teaching strength within our Institute - biological sciences, and sport and exercise science. The passion and expertise of our staff and our excellent facilities within these areas have led to the development of this degree. Our aim is to provide a detailed understanding of the main conditions that influence human health in the 21st century.

On this degree, you will study a range of biological disciplines including physiology, microbiology, immunology and genetics. You will couple these with the study of human biomechanics and psychology. Our aim is to provide you with an appreciation of how diet, alongside physical activity and regular exercise, plays a significant role in maintaining health and well-being. This unique blend of subject matter will ensure that you have a multidisciplinary understanding of human health, including behaviour and lifestyle change.

Opportunities for Human Biology and Health students at Aberystwyth include:

- facilities for high-throughput DNA sequencing, proteomics, metabolomics and spectroscopic platforms
- application of psychology to understand the process of behaviour change and its potential to delay the development of chronic conditions including heart disease, diabetes and cancer
- modern physiological, biomechanical and psychological equipment including body scanning for bone health and body composition determination, cardiovascular, respiratory and metabolic analysers, high-performance treadmills, cycles and rowers, along with computer-based digital video and a force plate to allow sophisticated analysis of movement.

Employability

Human Biology and Health graduates will be equipped with the skills and knowledge to enter a wide range of careers in biomedicine, health and allied professions.

Key Facts



Degree type: BSc.



UCAS Code: C194 (C195 with integrated year in industry).



Duration: 3 years (C195 is 4 years).

Module list

Below is an indicative list of modules that you may study on this course.

First year:

- Biochemistry and the Cellular Basis of Life
- Exploring Genetics
- Human Physiological Systems
- Metabolism
- Microbial Diversity
- Psychology of Physical Activity and Health
- Research Designs to Assess and Monitor Clients
- Study and Communication Skills *

Second year:

- Immunology
- Research Methods *
- Sport and Exercise Physiology.

Final year:

- Research Project *
- Exercise Management in Health and Chronic Disease
- Molecular Pharmacology
- Solving Societal Issues using Applied and Integrated Approaches.

See our website for the optional modules you may select to develop your specialist interests.

* also available partially or entirely through the medium of Welsh.



Life Sciences

BSc (Hons)

The Life Sciences foundation year is specifically designed to provide you with an alternative route into higher education to study one of our biological sciences degrees. You may be eligible for this scheme if you are qualified to enter higher education but do not have the relevant qualifications in science at A level (or equivalent), if you come from a non-traditional academic background, or if you have not yet achieved your full academic potential.

The Life Sciences foundation year is taught by staff from within the Department of Life Sciences, and consists of a fully integrated programme of lectures, practicals, workshops and tutorials in biology and associated subjects. This course will give you a solid foundation in a range of scientific disciplines including biochemistry, botany, cell biology, ecology, evolution, genetics, microbiology, zoology, study skills, and biological field and laboratory techniques. At the conclusion of the foundation year, you will have developed the knowledge and skills needed to progress into the first year of one of our degree schemes.

Employability

The Life Sciences foundation year provides a route into higher education, and through it a range of exciting opportunities for employment and further training. Depending on your chosen discipline, you will be a strong candidate for work as a research scientist, a conservation officer, a higher education lecturer or secondary school teacher.

Module list

Core modules you may study in your foundation year include:

- Communication Skills
- Molecules and Cells
- Organisms and the Environment
- Practical Skills for Biologists.

The modules you will study after your first year are determined by the degree scheme you choose to progress onto.

For an indication of the modules available, see the relevant degree pages in this prospectus, visit our website, or contact us.

Key Facts



Degree type: BSc.



UCAS Code: C990.



Duration: 4 years.

Microbiology

BSc (Hons)

With integrated year in industry (C502)

On our Microbiology degree you will explore the organisms that are too small to be visible to the naked eye. These include viruses, bacteria, protists and fungi. Microorganisms are essential to our understanding of life on Earth; they impact on human and animal disease, food production and spoilage, and are central to global nutrient cycles.

The study of microbiology requires expertise in immunology, genetics, biochemistry, cell biology and research methods, and you will receive training in these throughout your degree. You will learn about worldwide concerns such as antimicrobial resistance and emerging pathogens, as well as the beneficial use of microbes in biotechnology for food production and agriculture. Throughout the course there is strong focus on practical training in microbiological and molecular techniques, which will prepare you for a career as a professional scientist. There are practical modules in Years One and Two and an advanced research project makes up one-third of your final year.

Opportunities for Microbiology students at Aberystwyth include:

- extensive research and teaching labs equipped with the latest facilities for bioimaging, flow cytometry, lab scale to pilot plant fermentation, and extreme experimental environments
- the application of molecular techniques including DNA extraction, sequencing and analysis
- being taught by research-active teaching staff with expertise in microbiology, including biodefence, animal-microbe interactions, epidemiology, biofuels, brewing and extreme environment microbiology.

Employability

Our Microbiology degree will provide you with the skills to enter a career in healthcare, industry or education. Recent graduates have been employed by laboratory supplies companies in development or sales roles, and have entered the biotechnology sector or teacher training.

Key Facts



Degree type: BSc.



UCAS Code: C500 (C502 with integrated year in industry).



Duration: 3 years (C502 is 4 years).

Module list

Below is an indicative list of modules that you may study on this course.

First year:

- Biochemistry and the Cellular Basis of Life
- Ecology *
- Evolution and the Diversity of Life
- Exploring Genetics
- Metabolism
- Microbial Diversity *
- Molecular Laboratory Skills
- Study and Communication Skills *
- The Biosphere.

Second year:

- Environmental Microbiology and Monitoring *
- One Health Microbiology
- Practical and Professional Skills in Microbiology *
- Research Methods *

Final year:

- Research Project *
- Biotechnology
- Microbial Pathogenesis.

See our website for the optional modules you may select to develop your specialist interests.

* also available partially or entirely through the medium of Welsh.

Accredited by:



Sport and Exercise Science

BSc (Hons)

With integrated year in industry

(C602)

On this degree you will benefit from the expertise of our sport and exercise scientists, who have worked with a number of organisations, teams, and individual sports people, ranging from recreational athletes to those who have achieved success at European or world championship level. Under their guidance, you will develop your own practical skills in our dedicated sport and exercise laboratories.

On our Sport and Exercise Science degree, you will study the psychological, physiological and biomechanical foundations of sport and exercise, and develop an understanding of how these are important in optimising the training regime of sports competitors and exercise participants. You will develop a scientific understanding of how the human body moves, exercises and performs sport, and an appreciation of how sport and exercise science can improve human health and function, prevent disease or injury, or increase athletic performance. Upon graduation, you will be well prepared to support athletes, promote physical activity and health, and deliver exercise programmes.

Opportunities for Sport and Exercise Science students at Aberystwyth include:

- ready access to a wide range of sports and facilities, including naturally provided facilities such as the renowned mountain biking tracks nearby at Bwlch Nant yr Arian, our excellent beaches and mountains to mention a few
- access to industry-standard laboratories with modern equipment for the physiological, biomechanical and psychological analysis of sport performance and exercise participation.

Employability

Some of our graduates have gone on to further study and careers in the NHS (as GPs, cardiac technicians, physiotherapists, research scientists), or as Ministry of Defence personnel. Others have gone on to work as sport scientists in professional sports clubs (Bournemouth and Coventry City football clubs, Llanelli Scarlets RFC). An increasing number use the skills they developed as students to set up their own businesses.

Key Facts



Degree type: BSc.



UCAS Code: C600 (C602 with integrated year in industry).



Duration: 3 years (C602 is 4 years).

Module list

Below is an indicative list of modules that you may study on this course.

First year:

- Biochemistry and the Cellular Basis of Life
- Fundamentals of Human Nutrition
- Human Anatomy and Kinesiology
- Human Physiological Systems
- Psychology of Physical Activity and Health
- Research Designs to Assess and Monitor Clients
- Study and Communication Skills *

Second year:

- Applied and Integrated Studies
- Improving Physical Activity and Sport Performance
- Motor Learning and Performance
- Research Methods *
- Sport and Exercise Physiology
- Sports Injury.

Final year:

- Research Project *
- Exercise Management in Health and Chronic Disease
- Solving Societal Issues using Applied and Integrated Approaches
- Sport and Exercise Nutrition.

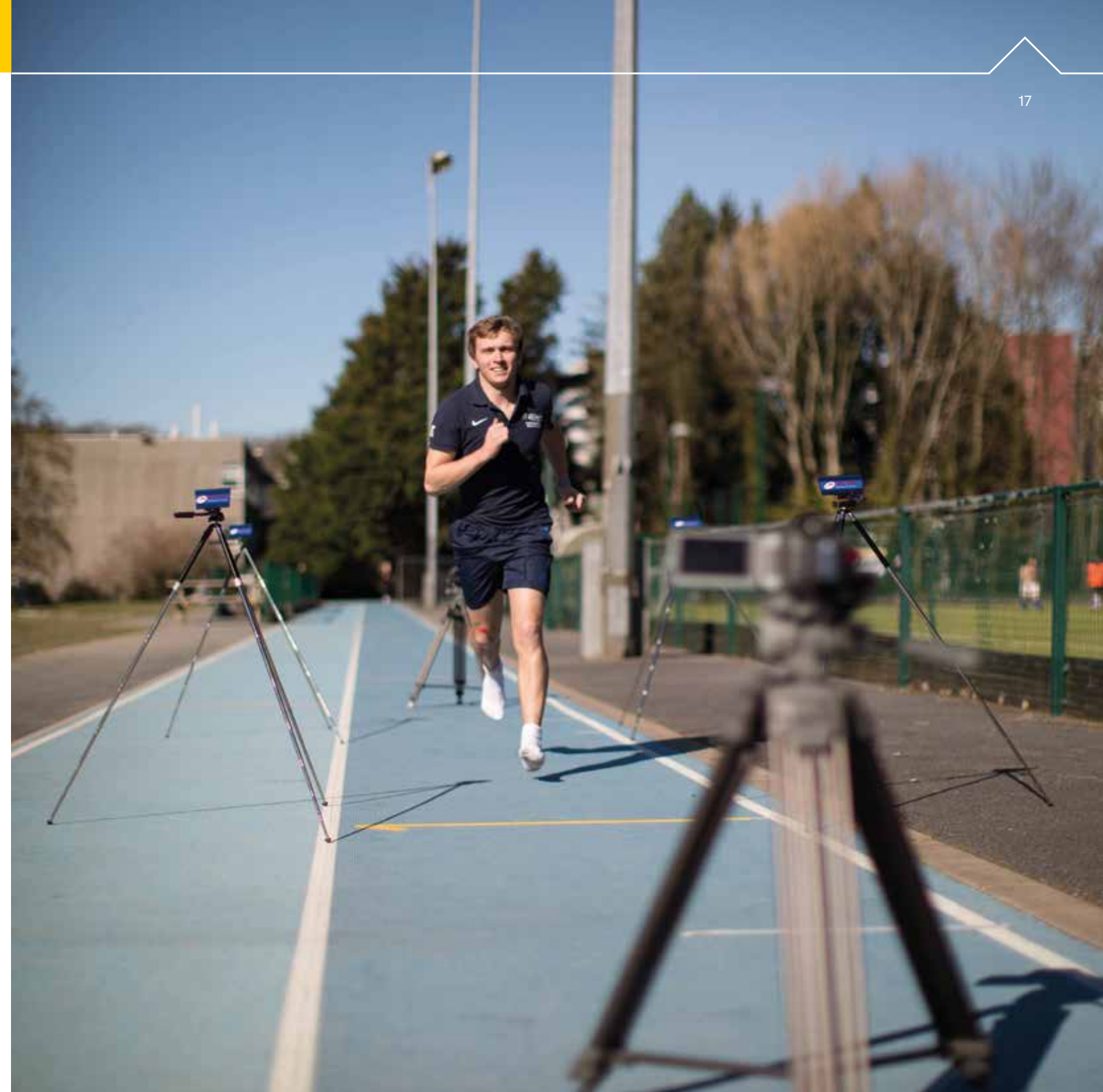
See our website for the optional modules you may select to develop your specialist interests.

* also available partially or entirely through the medium of Welsh.

Accredited by:



The British Association of Sport and Exercise Scientists
Endorsed Centre *C600 only



Veterinary Biosciences

BSc (Hons)

With integrated year in industry

(D907)

Veterinary Biosciences capitalises on Aberystwyth's strength in the animal health sector, which has led to the establishment of the Aberystwyth School of Veterinary Science, the only Veterinary School in Wales. We have large animal facilities at our commercially run university farms and specialist equine teaching centre, as well as a range of laboratories to ensure you gain relevant practical skills.

On this degree, you will combine modern molecular, cellular and physiological aspects to understand the biology of farm animals, pets, horses and wild animals. Your research-led perspective on veterinary health and disease will be integrated with an understanding of the realities of veterinary practice. Among many skills, you will learn to synthesise information from scientific literature, scrutinise data in terms of quality and quantity, respond to new data through laboratory investigation, and understand the implications of the findings for the veterinary field.

Opportunities for Veterinary Biosciences students at Aberystwyth include:

- being taught by trained veterinary surgeons and world-class veterinary researchers
- practical experience involving animal handling at our equine centre and farms, with the latest scientific techniques taught in our modern laboratories
- the ability to progress into a range of veterinary careers including veterinary science degree programmes on graduation.

Employability

Veterinary Biosciences graduates are well prepared for work in the animal health sector and inspired to tackle the challenges of the future, such as drug-resistant pathogen evolution, the effects of intensified farming, and the care of aging companion animals. They are well suited to careers in a range of areas, including veterinary research, veterinary diagnostic laboratories, Civil Service, charity advocacy, teaching, as well as research in the pharmaceutical and agricultural industries. Many of our students studying this degree aspire to study veterinary medicine.

Key Facts



Degree type: BSc.



UCAS Code: D906 (D907 with integrated year in industry).



Duration: 3 years (D907 is 4 years).

Module list

Below is an indicative list of modules that you may study on this course.

First year:

- Applied Animal Biology *
- Exploring Genetics
- Biochemistry and the Cellular Basis of Life
- Disease Diagnosis and Control
- Equine Anatomy and Physiology
- Microbial Diversity *
- Molecular Laboratory Skills
- Study and Communication Skills *

Second year:

- Animal Breeding: Genetics and Reproduction
- Immunology
- Research Methods *
- Veterinary Health.

Final year:

- Behaviour and Welfare of Domesticated Animals
- Research Project *
- Veterinary Infectious Diseases
- Veterinary Pharmacology and Disease Control.

See our website for the optional modules you may select to develop your specialist interests.

* also available partially or entirely through the medium of Welsh.



Biology

(with integrated foundation year)

BSc

Designed for prospective students who do not have a sufficient or relevant academic background, the integrated foundation year course is the perfect option to access this highly sought-after degree scheme. In the foundation year, you will be brought up to speed on the fundamentals of Biology, providing a solid base for you to go on and enjoy the full undergraduate degree.

On our Biology (with integrated foundation year) degree, you will study biology on all scales, ranging from environmental, to whole organism and cellular. You will focus on the sequencing of whole genomes, analysis of their evolution, and investigation of individual gene function, using cutting-edge analytical approaches. You will also consider the ethical dilemmas being posed by advances in biological knowledge, for example, in controversial disease treatments or reproductive medicine. Our aim is to develop your knowledge and experimental skills as well as to encourage you to think independently, creatively and critically.

Opportunities for Biology (with integrated foundation year) students at Aberystwyth include:

- the application of molecular techniques including DNA extraction, sequencing and analysis
- extensive research and teaching labs equipped with the latest state-of-the-art equipment, including bioimaging facilities, high-throughput DNA sequencing, proteomics, metabolomics and spectroscopic platforms
- advanced analytical expertise in bioinformatics, GIS, climate niche modelling and epidemiology supported by access to high-performance computing facilities.

Employability

Recent graduates have entered employment with education authorities, the Environment Agency, conservation organisations, pharmaceutical companies, the NHS, sea-life centres, public health laboratories and the water industry, to give a few examples.

Key Facts



Degree type: BSc.



UCAS Code: C101.



Duration: 4 years.

Module list

Below is an indicative list of modules that you may study on this course.

First year:

- Molecules and Cells *
- Communication Skills *
- Organisms and The Environment *
- Practical Skills for Biologists *

Second year:

- Biochemistry and the Cellular Basis of Life
- Ecology *
- Evolution and the Diversity of Life
- Exploring Genetics
- Metabolism
- Microbial Diversity *
- Molecular Laboratory Skills
- Study and Communication Skills *
- The Green Planet *

Third year:

- Chromosome Dynamics
- Climate Change: Plants, Animals and Ecosystems
- Evolution and Molecular Systematics
- Research Methods *

Final year:

- Research Project *
- Biotechnology
- Frontiers in Plant Science.

See our website for the optional modules you may select to develop your specialist interests.

* also available partially or entirely through the medium of Welsh.

Accredited by:



Our 10 metre research vessel, Taliesin, with Aberystwyth town in the background.

Biology and Climate Change

(with integrated foundation year)

BSc

Designed for prospective students who do not have a sufficient or relevant academic background, the integrated foundation year course is the perfect option to access this highly sought-after degree scheme. In the foundation year, you will be brought up to speed on the fundamentals of Biology, providing a solid base for you to go on and enjoy the full undergraduate degree.

On this degree, you will learn about the science underpinning our climate, and how humans have changed these processes in recent times. You will explore the impacts of climate change on biodiversity at the level of species, habitats and ecosystems, and the scope for organisms and populations to evolve in the light of this threat. By working across disciplines, you will appreciate the need for both scientific research and governance in tackling these important issues.

Opportunities for Biology and Climate Change (with integrated foundation year) students at Aberystwyth include:

- the great variety of local habitats and ecosystems, both marine and terrestrial, and ideal locations to study the impacts of climate change on biodiversity, and the scope for mitigation
- the chance to carry out field research, both locally and abroad
- the chance to work with established academic researchers who work on various aspects of the past, present and future effects of global change on natural ecosystems.

Employability

Our graduates are well placed for roles in climate change management, adaptation and mitigation and careers in related areas, such as environmental education and consultancy or conservation.

Key Facts



Degree type: BSc.



UCAS Code: FC7F.



Duration: 4 years.

Module list

Below is an indicative list of modules that you may study on this course.

First year:

- Molecules and Cells *
- Communication Skills *
- Organisms and the Environment *
- Practical Skills for Biologists *

Second year:

- Climate Change: Impacts, Perceptions, Adaptations
- Ecology *
- Evolution and Diversity of Life
- Introduction to Conservation
- Microbial Diversity *
- Study and Communication Skills *
- The Green Planet *
- Climate and Climate Change.

Third year:

- Climate Change: Plants, Animals and Ecosystems
- The Governance of Climate Change
- Research Methods *.

Final year:

- Global Biodiversity Conservation
- Research Project *.

See our website for the optional modules you may select to develop your specialist interests.

* also available partially or entirely through the medium of Welsh.

Sport and Exercise Science

(with integrated foundation year)

BSc (Hons)

Designed for prospective students who do not have a sufficient or relevant academic background, the integrated foundation year course is the perfect option to access this highly sought-after degree scheme. During the foundation year, you will gain a solid base to enable you to go on and enjoy the full course in your second year.

On our Sport and Exercise Science degree, you will study the psychological, physiological and biomechanical foundations of sport and exercise, and develop an understanding of how these are important in optimising the training regime of sports competitors and exercise participants. You will develop a scientific understanding of how the human body moves, exercises and performs sport, and an appreciation of how sport and exercise science can improve human health and function, prevent disease or injury, or increase athletic performance. Upon graduation, you will be well-prepared to support athletes, promote physical activity and health, and deliver exercise programmes.

Opportunities for Sport and Exercise Science (with integrated foundation year) students at Aberystwyth include:

- ready access to a wide range of sports and facilities, including naturally provided facilities such as the renowned mountain biking tracks nearby at Nant yr Arian, our excellent beaches and mountains to mention a few
- access to industry-standard laboratories with modern equipment for the physiological, biomechanical and psychological analysis of sport performance and exercise participation.

Employability

Some of our graduates have gone on to further study and careers in the NHS (as GPs, cardiac technicians, physiotherapists, research scientists), or as Ministry of Defence personnel. Others have gone on to work as sport scientists in professional sports clubs (Bournemouth and Coventry City football clubs, Llanelli Scarlets RFC). An increasing number use the skills they developed as students to set up their own businesses.

Key Facts



Degree type: BSc.



UCAS Code: C60F.



Duration: 4 years.

Module list

Below is an indicative list of modules that you may study on this course.

First year:

- Molecules and Cells
- Communication Skills
- Organisms and the Environment
- Practical Skills for Biologists.

Second year:

- Biochemistry and the Cellular Basis of Life
- Fundamentals of Human Nutrition
- Human Anatomy and Kinesiology
- Human Physiological Systems
- Psychology of Physical Activity and Health
- Research Designs to Assess and Monitor Clients
- Study and Communication Skills *.

Third year:

- Applied and Integrated Studies
- Improving Physical Activity and Sport Performance
- Motor Learning and Performance
- Research Methods *
- Sport and Exercise Physiology
- Sports Injury.

Final year:

- Research Project *
- Exercise Management in Health and Chronic Disease
- Solving Societal Issues using Applied and Integrated Approaches
- Sport and Exercise Nutrition.

See our website for the optional modules you may select to develop your specialist interests.

* also available partially or entirely through the medium of Welsh.

Integrated Masters schemes

MBiol

Biochemistry	(C709)
Biology	(C109)
Microbiology	(C509)

Our Integrated Masters schemes offer you the opportunity to combine a BSc with an extra year of study so that you will graduate with a Masters-level qualification. These degrees are designed to develop the breadth and depth of knowledge, and the competence and confidence in research methods required to pursue a career as a professional scientist. All our Integrated Masters schemes have attained advanced accreditation from the Royal Society of Biology.

During your Masters-level final year of study, you will have the opportunity to apply your subject-specific knowledge and understanding to a major independent scientific research project conducted in close collaboration with one of our Institute's research groups. You will also study taught modules aimed at giving you insight into the most current techniques and theories in the biological sciences. Together, these will develop essential skills required by today's professional scientists.

Opportunities for Integrated Masters students at Aberystwyth include:

- access to extensive research and teaching labs equipped with the latest equipment, including bioimaging facilities, high-throughput DNA sequencing, flow cytometry, lab scale to pilot plant fermentation, extreme experimental environments, and proteomics, metabolomics and spectroscopic platforms
- aquarium systems and extensive growth rooms to support marine, freshwater and terrestrial organisms
- the chance to complete your Masters-level research project embedded within one of several pioneering research groups.

Key Facts

 Degree type: MBiol.

 Duration: 4 years.

Core module list

Core modules you may study in your final Masters year comprise:

- MBiol Research Project
- Frontiers in Biosciences
- Field and Laboratory Techniques
- Research Methods in the Biosciences.

Accredited by:



Employability

Our Integrated Masters degrees have been specifically created to meet the increasing demand for suitably qualified personnel to work at high level in scientific research, development, lecturing, training and education, public and private commercial enterprise, consultancy and advisory work in the UK and throughout the world. The MBiol is also a recognised alternative to MSc for progression to a PhD studentship, and an excellent foundation for a career as a professional scientist.



Integrated year in industry

If you want to broaden your horizons and get a taste of the workplace or experience a career through a work placement, then the integrated year in industry will strengthen and improve your career prospects after graduating. The majority of our single honours courses are available with the option of an integrated year in industry.

The integrated year in industry takes place in your third year, after which you will return to Aberystwyth to complete your degree in your fourth year. The year is assessed and contributes towards your final degree mark.

Advantages:

- More employable when you graduate
- More likely to have a higher starting salary
- More likely to secure a graduate level job.

Our own students have identified additional advantages:

- Find out what you would actually like to do as a graduate
- Great experience - exploring a new area which can be abroad
- Makes your final year easier
- Develop your social and professional networks.

Applications and interviews can be time-consuming and you will graduate a year later than your university friends, but the advantages of the integrated year in industry definitely outweigh the disadvantages.

What support is available?

- Support is provided by an academic member of staff primarily responsible for the integrated year in industry students and the department's own Careers consultant, working hand in hand with the Careers Service
- In your first year you will receive guidance on how to explore career opportunities and enhance employability
- In your second year you will receive help searching for posts, writing CVs, cover letters and making applications. You will receive formal interview practice and official approval of your placement(s)
- During your Year in Industry you will receive regular contact and support and will be visited by an academic supervisor.

Emily, Assistant Laboratory Technician, Micropharm, UK

My placement is laboratory based so the experience I have gained has been mainly skills based. I have learnt how to set up cytotoxicity and trypsin assays, handle liquid nitrogen, calibrate pipettes and how to use various other pieces of lab equipment. But additionally I have learnt how to present my findings in meetings and write SOPs for others to understand. I think that my placement will help me career-wise as it shows I have a whole 12 months of lab experience when applying for jobs. It has also confirmed for me that working for a pharmaceutical company is something I would like to do after I graduate as I have loved my placement so far.



Global opportunities



Aberystwyth's Global Opportunities team offer an exciting range of options for you to go overseas as part of your degree: from short courses and volunteering opportunities in the summer, to a full semester or year abroad studying your chosen subject at one of our partner universities.

The University also offers a number of courses which include an integrated year studying abroad, enabling you to study at one of our European or international partner universities for one or two semesters during your third year, returning to Aberystwyth for your final year and graduation.

Reports have shown that students who study abroad are more attractive to employers and earn more than their peers. Take advantage of the opportunity of a lifetime while improving your critical skills by choosing to study abroad.



Sydney



Denmark



Montana



St. Petersburg



Hong Kong



Washington, DC



Bergen



Austria



Ottawa

Studying through the medium of Welsh

All our undergraduate degree schemes can be studied partly through the medium of Welsh. For some degree schemes, more than half the modules are available through the medium of Welsh.

You may choose to present all your coursework, including assignments and oral presentations, through the medium of Welsh and complete your written examinations in Welsh, regardless of the module's medium of instruction. The Department also ensures that all Welsh-speaking students are allocated a personal tutor and dissertation tutor who can speak the language. These teaching arrangements mean that our Welsh-medium provision is open to students from a range of different Welsh language backgrounds.

Studying through the medium of Welsh is advantageous in many ways, including:

- increased job prospects
- being taught in smaller groups
- being part of a friendly and welcoming Welsh-speaking community.

All students studying Welsh medium modules will also be eligible for the University's Welsh medium study scholarship, worth up to £250 per year. Furthermore, many of our degree courses are eligible for Coleg Cymraeg Cenedlaethol undergraduate scholarships worth £1500 over three years. For more information about these scholarships and for a list of the eligible degree schemes please see the Coleg Cymraeg Cenedlaethol website: www.colegcymraeg.ac.uk/en/study/mediumofwelsh



Research

The Department of Life Sciences is an internationally-recognised research and teaching centre providing a unique base for research in response to global challenges such as food security, sustainability, and the impacts of climate change. Our scientists conduct research on genes and molecules, nutrition and exercise, and whole organisms from microbes to entire ecosystems.

Microbiology Research Group

We study the ecological, physiological and metabolic capabilities of a wide range of micro-organisms, in particular fungi and bacteria. Our aim is to understand their important roles in ecosystem function, discover how better to exploit them in biotechnology, and modulate their impact, both beneficial and harmful on humans, domesticated animals, plants and the natural environment.

Molecular Biosystems Research Group

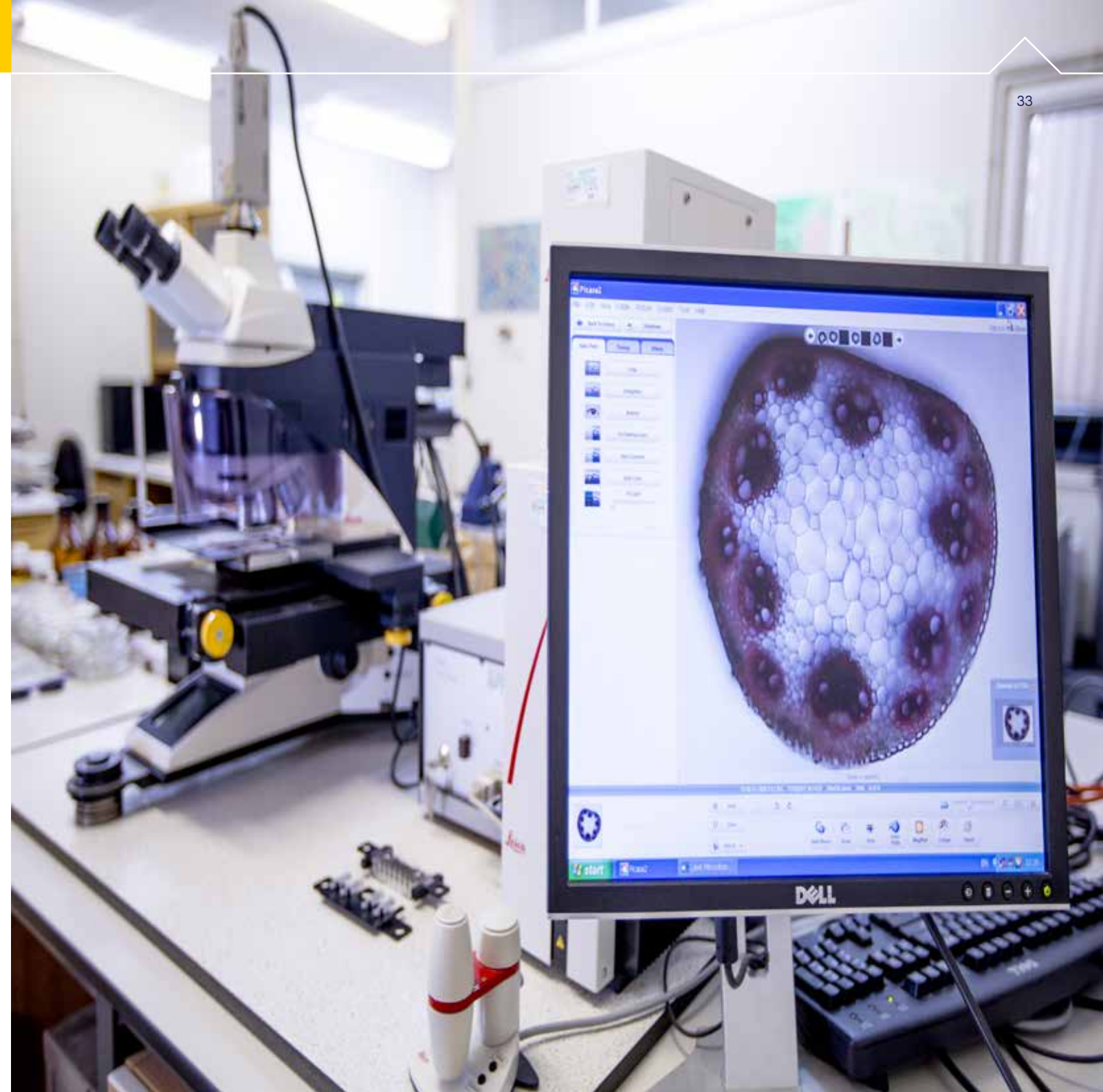
We use molecular approaches to study living systems as assemblies of chemical processes. This group brings together scientists who are applying the latest approaches to tackle several global challenges, including developing novel antimicrobials and other medicinal compounds, and increasing agricultural efficiency for food and biofuel production. The strategies employed include traditional and cutting-edge methods for separating and characterising biomolecules, as well as genomic, proteomic and metabolomic approaches.

Parasitology and Epidemiology Research Group

This group engages in investigations that address coevolutionary relationships between parasites and their hosts, and systems-based investigations. We are collectively addressing some of the world's major health problems caused by biomedical and veterinary pathogens. Our research interests span a variety of disciplines and involve molecular and biochemical parasitology, the landscape epidemiology of vector borne diseases, and the evolutionary and immunological implications of host-parasite interactions. We consider a range of infectious diseases caused by viruses, bacteria, protozoa, microsporidia and helminths.

Diet, Exercise and Health Research Group

This group is uniquely placed in the UK to link international studies on the causal relationship between diet, exercise and health with plant and animal breeding as well as the chemical phenotyping of food materials. With a focus on the use of metabolomics technology the group has developed collaborations with clinical experts having an interest in the development of chemical fingerprint screening methods for human diseases. Core strategic research programmes enhance the quality of animal products to meet the rapidly changing requirements of consumers for food which is safe, healthy, traceable, of consistent eating quality, diverse and convenient.



Research highlights

Technology to prevent octopus over-fishing

Our scientists are developing new technology to prevent the over-fishing of octopuses and other sea creatures. Octopus species are often misidentified, and their catch numbers and locations inaccurately reported. This is prompting fears that a lack of data about these molluscs could lead to overfishing, threatening their future and an important source of protein-rich food for the world population. A multidisciplinary research team aims to address this knowledge gap by using environmental DNA, machine learning and artificial intelligence tools to create a seafood traceability network to improve stock management and ensure the sustainability of octopus fisheries.

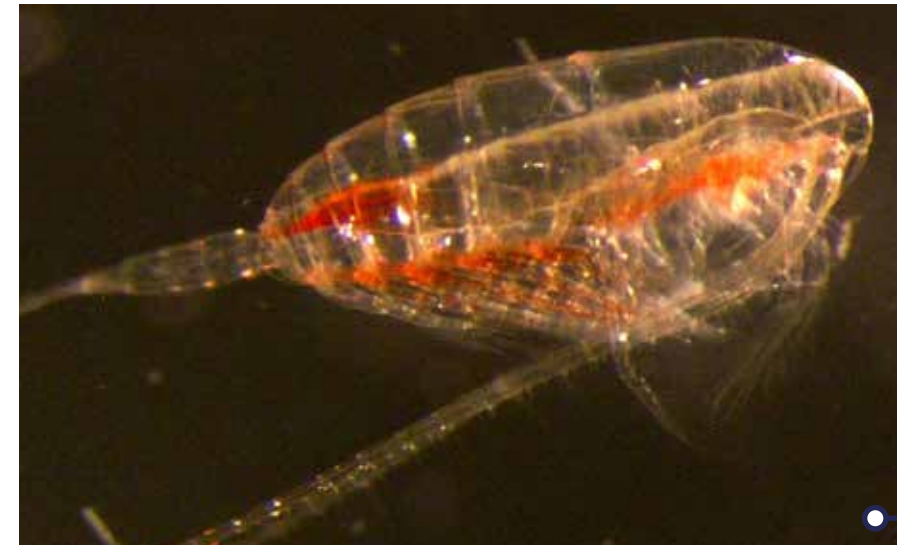


Scientists harness technology to improve stroke patients' recovery

Working with colleagues from the Department of Computer Science, our scientists have developed a mobile app to improve the quality of life of stroke patients whose mobility has been affected by the condition. The wearable devices use artificial intelligence to measure their ability to move to monitor and improve exercise rehabilitation in stroke patients.

New University spinout company to develop diagnostic tests for human and animal diseases

Researchers are working on new diagnostic technologies which could save the lives of thousands of people. The research has focused on developing clinically useful biomarker identification or "fingerprinting" and testing for major chronic diseases that impact on an aging human population. A parallel strand of work has targeted important animal diseases. The work will enable patient-clinician interaction and diagnosis without the need for clinical face-to-face consultations, thereby reducing the need for valuable hospital appointments and the risk to patients.



Biological clocks keep ticking in the high Arctic summer

Our researchers have found that the natural biological clocks of tiny marine organisms continue to function in the Arctic summer when the sun doesn't set. Understanding more about the circadian rhythms of Arctic marine life will help scientists to more accurately predict how the ecosystem will respond to the challenges of warming waters and reducing sea ice.

How to apply

Once you've decided what course you want to study and where, you'll be able to start the university application process. Here's a brief overview of the process and our procedures here at Aberystwyth.

1 Apply through UCAS.com

Deadline 15 January. Aberystwyth University institution code: A40.

Top tip: You'll be given a 10-digit UCAS ID number. Keep this to hand as you'll be asked for it many times.

2 The University will consider your offer

Top tip: Use UCAS Track to keep an eye on your application. At Aberystwyth we aim to make a decision within four weeks.

3 The offer will show on UCAS track

4 Decide where to go

Once you've received all your offers, you'll need to decide which university you want to go to, within a set time. This is when you'll need to note which universities will be your firm and insurance choices.

5 Accommodation

Once you've chosen your firm/insurance choice you'll be able to apply for your accommodation (April onwards).

6 Results day

UCAS Track will confirm your offer of a place. If you're not clear what the offer is, contact the university directly. Make sure you're not on holiday on results day. If you don't get the grades you've hoped for, you may want to consider entering Clearing.

7 Start packing!





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