1872 PRIFYSGOL ABERYSTWYTH UNIVERSITY

Adran y Gwyddorau Bywyd
Department of Life Sciences

Postgraduate studies in

Life Sciences

Contents

Important information

The programme information published in this brochure was correct at time of going to print (February 2025) 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.

We are delighted that you are considering the Department of Life Sciences as the place to study your postgraduate degree. We are a world-class institute whose research makes a significant contribution towards solving world issues such as the prevention of deadly diseases, food security and crop growth in drought-prone soil, developing sustainable and environmentally friendly fuels, and studying the effects of climate change on our ecosystem.

We offer a wide range of taught Masters and distance learning courses, and welcome research students on projects allied to our specialisms. We provide an excellent learning environment for both your academic and personal development, and we pride ourselves on delivering the highest quality teaching and learning experience to help you attain your goals.

Some of the research facilities that our research students have access to include:

- the UK's National Plant Phenomics Centre, plant breeding programmes that underpin commercial seed production, a seed biobank that is part of the UK Plant Genetic Resources Group, hydroponic crop research facilities, biofuel crop research programmes and the BEACON Biorefining Centre
- university farm enterprises that include a commercial and pedigree sheep flock a robotically milked dairy herd, dairy heifer replacement unit, beef fattening unit and commercial arable and forage crops
- facilities for high-throughput multi-omic studies, including genomics, metabolomics, proteomics and phenomics. To help with bioinformatics analysis a high performance computing cluster is available, with additional resources from Supercomputing Wales
- access to our research aquarium facilities, the latest zoological techniques including molecular analyses, advanced microscopy and contemporary biodiversity assessment, and an array of internationally important habitats and species within the Aberystwyth area – ideal locations for studying all aspects of wildlife conservation and habitat management
- livestock science, production and health facilities that include the VetHub1 Bovine Tuberculosis Research Facility, Veterinary Parasitology facilities and a close working relationship with the Wales Veterinary Science Centre
- the Pwllpeiran Upland Research Station, which is a centre for the study of upland farmed ecosystems with an extensive range of vegetation types covering a continuum from intensively-managed improved swards to mountain pasture
- AberInnovation, the Aberystwyth Innovation and Enterprise Campus, home to the Future Foods Centre which is a food grade environment for the testing, validation and improvement of existing and novel materials as foods, and an Advanced Analysis Centre, supporting analytical needs for food intervention studies.

Aberystwyth is a vibrant and cosmopolitan seaside town, with lots to offer our students. Situated in a stunning landscape including sea, beach, wooded valleys and rolling hills it is a unique place to live and study. Read through this brochure to discover more about our postgraduate courses - we warmly invite you to join our lively community of postgraduate students and staff.

Professor Iain Barber, Head of Department

Our courses

Taught degrees

Distance Learning

Research degrees

Animal Science

MSc

With a strong emphasis on student-centered study, this degree will enable you to pursue your own interests in animal science, whilst also acquiring the knowledge and skills needed for a successful career across the breadth of animal sciences.

On this course, you will study animal science and its application to nutrition, breeding and animal management. This will enable you to be ideally placed to ensure that the demands of production and welfare are appropriately balanced, through the development and implementation of innovative management practices and dissemination of knowledge and advice to practitioners.

You will benefit from:

- the opportunity to interact with internationally renowned researchers, helping you make contacts for your future career
- being taught by staff with an internationally renowned reputation for teaching and research in the animal sciences
- teaching supported by 800 ha of farmland, a 350 cow dairy unit, upland and lowland sheep flocks, and an equine teaching and research yard
- access to a range of world-leading first-class modern laboratories.

Employability

This degree provides you with the knowledge and skills required to pursue a leading career in animal research and development, nutrition and welfare, academia, training and teaching, public and private commercial enterprise, advisory and consultancy work, government agencies and non-government organisations throughout the world. Many of our graduates have also progressed to PhD and Veterinary Medicine.

Modules

Core modules that you may study on this course include:

- Animal Breeding and Genetics
- Infection and Immunity
- Dissertation.

Animal Breeding and Genetics

Studies the potential for genetic improvement for economic and/or performance traits using Mendelian and molecular genetics.

Infection and Immunity

Studies the role of immunology, bacteriology, virology and parasitology at a molecular and applied level in animal disease.

Dissertation

Provides you with an opportunity to carry out a considerable in-depth investigative study in an area of your choice.

You will also choose from a selection of optional modules, which currently include:

- Equine Nutrition
- Livestock Nutrition
- Grassland Science
- Equine Reproductive Physiology and Breeding Technology
- Livestock Production Science
- Understanding Equine Action from Anatomy to Behaviour.

For more details and the latest information on our modules, see our website.

Key Facts

Degree type: MSc

Course code: D310

Duration: 1 year (full-time) or 2 years (part-time)

Animal Science

MRes

The MRes degree differs from MSc Animal Science in that it places a much greater emphasis on research than taught elements. Providing you with a high level of research training, the MRes is an ideal stepping-stone for those considering a PhD in animal science or the wider field of animal/veterinary/biological science as well as careers in research and development.

Working under the supervision of active researchers with expertise in the field, you will develop a year-long animal science research project in the areas of production, reproduction, parasitology, nutrition, cognition or behaviour. You will be mentored in hypothesis-driven experimental design and will receive training in analytical techniques, statistical analysis and the interpretation of results. You will also explore other areas of animal science by studying two optional modules from a selection available.

You will benefit from:

- the opportunity to interact with internationally renowned researchers, helping you make contacts for your future career
- being taught by staff with an internationally renowned reputation for teaching and research in the animal sciences.

Employability

This degree provides you with the knowledge and skills required to pursue a leading career in animal research and development, nutrition and welfare, academia, training and teaching, public and private commercial enterprise, advisory and consultancy work, government agencies and non-government organisations throughout the world. Many of our graduates have also progressed to PhD and Veterinary Medicine.

Key Facts

Degree type: MRes

Course code: D311

Duration: 1 year (full-time) or 2 years (part-time)

Modules

Core modules that you will study on this course include:

- Dissertation.

You will also choose two from a selection of optional modules, which currently include:

- Infection and Immunity
- Animal Breeding and Genetics
- Equine Nutrition
- Equine Reproductive Physiology and Breeding Technology
- Understanding Equine Action: From Anatomy to Behaviour
- Livestock Nutrition
- Livestock Production Science
- Grassland Science.

Infection and Immunity

Studies the role of immunology, bacteriology, virology and parasitology at a molecular and applied level in animal disease.

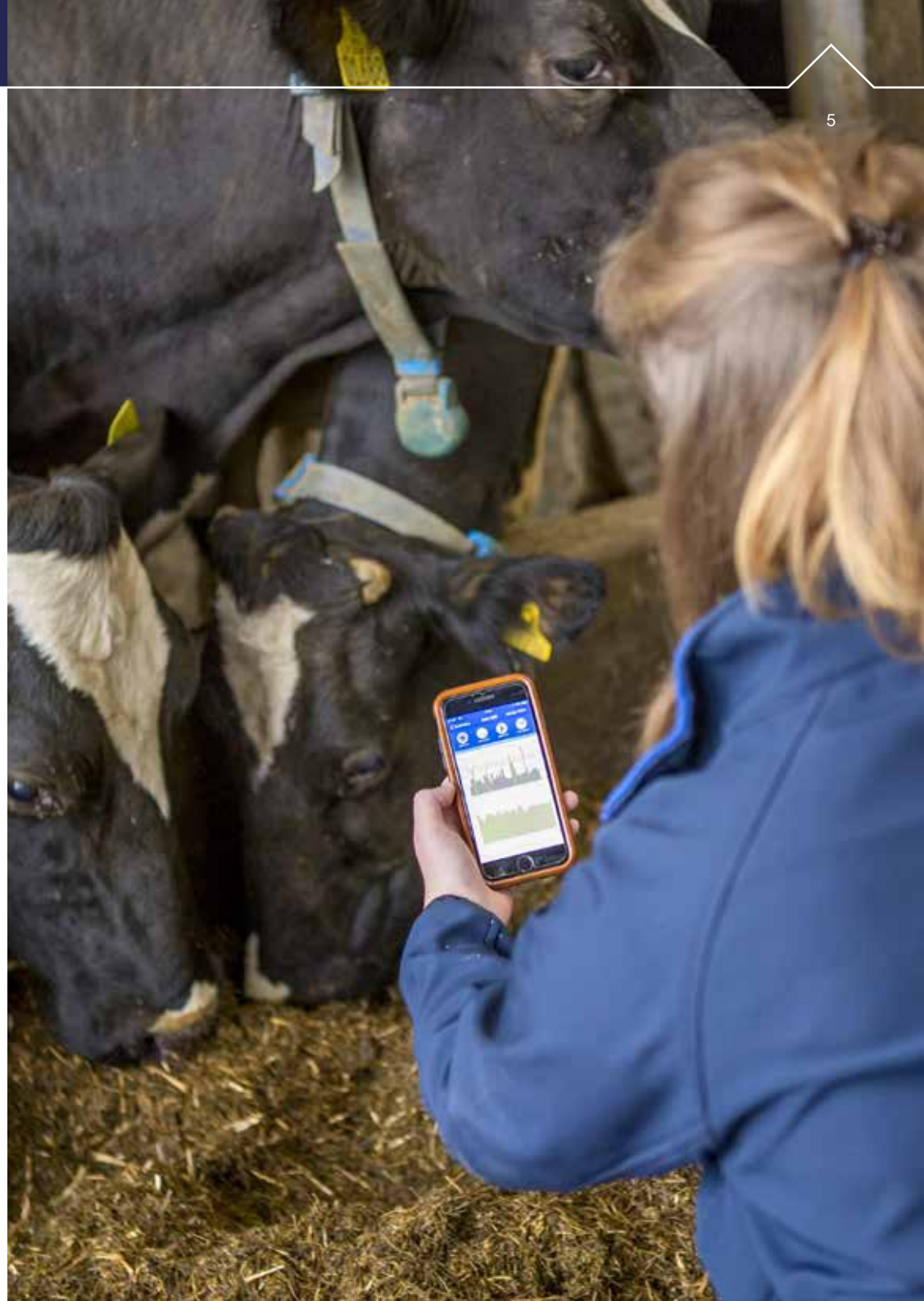
Equine Nutrition

Studies the principles of nutrition as applied to feeding the horse for optimum growth, development and performance.

Understanding Equine Action from Anatomy to Behaviour

Provides an understanding of equine anatomy, physiology and behaviour to optimise equine welfare, in particular performance horses.

For more details and the latest information on our modules, see our website.



Biodiversity and Conservation Management

MSc

The MSc in Biodiversity and Conservation Management meets the needs of future environmental professionals and attracts students from around the world.

The course is research- and practice-led, and provides a sound overview of the theoretical background of biodiversity and conservation science. This Masters degree is ideal for those wanting to pursue postgraduate studies in the fields of biodiversity, environmental science and conservation. It is also suitable for those already working in these sectors who want to obtain further relevant qualifications or for those working in other fields who wish to pursue this line of work.

You will benefit from:

- engaging with and working alongside stakeholders and conservation practitioners in real-world situations
- a magnificent range of habitats in and around Aberystwyth, from coastal to uplands.

Employability

As well as developing many critical subject-specific skills, you will also enhance your scientific communication, teamwork, problem-solving, data handling, study and research skills. You will develop and display professionalism that will allow you to excel in any future workplace. Career opportunities exist with organisations involved in conservation or general environmental management, such as Natural Resources Wales, Wildlife Trusts, The Centre for Ecology and Hydrology, RSPB, National Trust, The Environment Agency, Local authority departments and NGOs. Many students have also progressed to PhDs.

Modules

Core modules that you may study on this course include:

- Fundamentals of Biodiversity
- Ecological Management and Conservation Biology
- Ecological Monitoring
- Introduction to Environmental Law and EIA.

Fundamentals of Biodiversity

Develops your essential taxonomic skills from both the traditional morphological to modern molecular methods.

Ecological Monitoring

Apply your taxonomic skills as you conduct surveys across marine and terrestrial settings for long term monitoring projects.

Ecological Management and Conservation Biology

You will work with conservation and environmental stakeholders in real world settings to develop and critically evaluate ecological management and conservation practices.

For more details and the latest information on our modules, see our website.

Key Facts

Degree type: MSc

Course code: J790

Duration: 1 year (full-time) or 2 years (part-time)

Biosciences

MRes

This degree will provide you with the skills, knowledge and critical insight necessary for research in the biological sciences.

You will learn how to undertake excellent research and appreciate how research can address the grand challenges in biology that we face as a society.

Whichever area of the biosciences you are interested in, on the MRes Biosciences you will be able to engage with generic and specific skills through taught modules and supervised research training. The research training builds on the Department of Life Sciences' capabilities for novel and internationally important science in all areas of the biosciences, including agriculture, animal reproduction, aquatic biology, behaviour, biochemistry, cell biology, ecology, environmental science, evolutionary biology, exercise and health, genetics, microbiology, parasitology, physiology, plant and animal breeding, sport science and zoology.

The core element of this course is the MRes Dissertation which will allow you to specialise in a topic of interest to you. You will undertake a prolonged period of experimental work/ data gathering and research under the supervision of your dissertation supervisor. The MRes is therefore an ideal stepping stone for those considering a PhD and/or a career in research.

Employability

Throughout this course you will develop strong data collection/analysis, fieldwork and laboratory skills. You will have also learnt to work effectively and independently and will have enhanced your project management skills to deliver a demanding combination of research, analysis, communication and presentation.

Modules

Core modules that you may study on this course include:

- Dissertation.

Dissertation

Provides an opportunity for you to carry out a considerable in-depth investigative study in an area of your choice.

You will also choose from a selection of optional modules, which currently include:

- Infection and Immunity
- Frontiers in the Biosciences
- Hot Topics in Parasite Control
- Ecological Monitoring
- Fundamentals of Biodiversity
- Field and Laboratory Techniques.

For more details and the latest information on our modules, see our website.

Key Facts

Degree type: MRes

Course code: C190

Duration: 1 year (full-time) or 2 years (part-time)

Equine Science

MSc

This long-established internationally recognised degree will provide you with advanced subject knowledge and professional skills in equine science to pursue a range of careers in the equine industry.

This course places a strong emphasis on student-centred study in order to hone your skills in original thought, analysis, interpretation and reasoning, as well as encouraging you to pursue your own specific areas of interest. Equine science and physiology along with its application to practice will be core themes running throughout the course.

You will benefit from:

- being taught by the longest-established provider of equine-related higher education in the UK with the MSc Equine Science established in 1978
- the opportunity to interact with internationally renowned researchers helping you make contacts for your future career
- teaching supported by a modern well-equipped equine teaching yard and the only dedicated fully-licensed equine research yard in the UK outside of veterinary colleges
- access to a range of world-leading first-class modern laboratories.

Employability

As a graduate you will be ideally placed to enter the top careers in the equine industry or related professions in equine and animal research, development, academia, training, public and private commercial enterprise, advisory work, and government organisations in the UK and throughout the world. Many of our graduates have also progressed to PhD and Veterinary Medicine.

Key Facts

Degree type: MSc

Course code: D391

Duration: 1 year (full-time) or 2 years (part-time)

Modules

Core modules that you may study on this course include:

- Animal Breeding and Genetics
- Infection and Immunity
- Equine Nutrition
- Equine Reproductive Physiology and Breeding Technology
- Understanding Equine Action from Anatomy to Behaviour
- Dissertation.

Infection and Immunity

Investigates the role of immunology, bacteriology, virology and parasitology at a molecular and applied level in animal disease.

Equine Nutrition

Studies the principles of nutrition as applied to feeding the horse for optimum growth, development and performance.

Equine Reproductive Physiology and Breeding Technology

Considers the application of reproductive physiology to, and the use of advanced reproductive techniques in, the management of horses for breeding.

Understanding Equine Action from Anatomy to Behaviour

Provides an understanding of equine anatomy, physiology and behaviour to optimise equine welfare, in particular performance horses.

For more details and the latest information on our modules, see our website.

Image with kind permission of Horses Inside Out.

Equine Science

MRes

The MRes degree provides you with the ideal opportunity to carry out research in a specific area of equine science, while studying a selection of taught elements relating to reproduction, anatomy, immunology, nutrition and genetics of the horse. Providing you with a high level of research training, the MRes is the ideal stepping-stone for those considering a PhD in equine science or the wider field of animal/veterinary/biological science as well as careers in research and development.

Working under the supervision of active researchers with expertise in the field, you will develop a year-long equine science research project in the areas of production, reproduction, parasitology, nutrition, cognition, behaviour, anatomy or exercise physiology. You will be mentored in hypothesis-driven experimental design, and will receive training in analytical techniques, statistical analysis and the interpretation of results. You will also explore other areas of equine science by studying two optional modules from a selection available.

Employability

As a graduate you will be ideally placed to enter the top careers in the equine industry to improve horse health, welfare and performance. You will be well suited to professions in equine and animal research, development, academia, training, public and private commercial enterprise, advisory work, and government organisations in the UK and throughout the world. Many of our graduates have also progressed to PhDs and Veterinary Medicine.

Modules

Core modules that you may study on this course include:

- Dissertation.

You will also choose two from a selection of optional modules, which currently include:

- Infection and Immunity
- Animal Breeding and Genetics
- Equine Nutrition
- Equine Reproductive Physiology and Breeding Technology
- Understanding Equine Action: From Anatomy to Behaviour.

Equine Nutrition

Studies the principles of nutrition as applied to feeding the horse for optimum growth, development and performance.

Equine Reproductive Physiology and Breeding Technology

Considers the application of reproductive physiology to, and the use of advanced reproductive techniques in, the management of horses for breeding.

Understanding Equine Action from Anatomy to Behaviour

Provides an understanding of equine anatomy, physiology and behaviour to optimise equine welfare, in particular performance horses.

For more details and the latest information on our modules, see our website.

Key Facts

Degree type: MRes

Course code: D393

Duration: 1 year (full-time) or 2 years (part-time)

Livestock Science

MSc

This degree offers biological, scientific and professional training that will provide you with the knowledge and skills required to pursue leading careers in the livestock industry, scientific research, consultancy services and education.

Food security is vital to the success and stability of any country and its population. Meeting the world's increasing demand for food is one of the most important challenges of the 21st century. Livestock Science is, and will remain, central to meeting this challenge. Not only is food quantity important, but so too is quality, with consumers continuing to demand a high quality product at an affordable price. These demands can only be met by the development and implementation of innovative concepts and ideas by suitably well-qualified graduates, who will also then drive forward these exciting developments in livestock science and production.

You will benefit from:

- the opportunity to interact with internationally renowned researchers, helping you make contacts for your future career
- teaching supported by 800 ha of farmland, a 350 cow dairy unit, and upland and lowland sheep flocks.

Employability

Graduates of this degree will have in-depth knowledge and a critical understanding of the key contemporary topics affecting the Livestock Sciences. You will acquire enhanced problem-solving, data handling, study, research and communication skills. Our graduates progress to careers in scientific research and publishing, laboratory work, animal nutrition, animal welfare, teaching, animal breeding and technical sales. Graduates have also progressed to PhDs or Veterinary Medicine.

Modules

Core modules you may study on this course include:

- Animal Breeding and Genetics
- Infection and Immunity
- Livestock Nutrition
- Grassland Science
- Livestock Production Science
- Dissertation.

Infection and Immunity

Examines the role of immunology, bacteriology, virology and parasitology at a molecular and applied level in animal disease.

Livestock Nutrition

Studies the principles of nutrition applied to feeding livestock to optimise growth and development for meat and dairy production.

Grassland Science

Studies the science of grass and forage production applied to its use as a livestock feed.

Livestock Production Science

Examines the application of livestock science to the economic production of livestock to ensure food quality and quantity.

Dissertation

Provides an opportunity for you to carry out a considerable in-depth investigative study in an area of your choice.

For more details and the latest information on our modules, see our website.

Key Facts

Degree type: MSc

Course code: D320

Duration: 1 year (full-time) or 2 years (part-time)

Parasite Control

MRes

Parasitism is the most successful lifestyle on the planet and leads to diverse and highly-damaging infectious diseases of agricultural, veterinary and biomedical significance. Therefore, a greater understanding of the parasite species responsible for these conditions and the means by which they are controlled remains a priority for scientists, healthcare professionals and farmers in the 21st century.

Specifically focusing on parasites and the diseases that they cause, you will gain expert knowledge in the detection, prevention and control of protozoan as well as metazoan animal and human pathogens. You will be trained in biochemistry, molecular biology, whole organism/cell culture and manipulation, bioinformatics, proteomics, transcriptomics, genomics, functional genomics, drug discovery, vaccinology, biomarker discovery, genetics/epigenetics, epidemiology, vector/intermediate host biology and ecology. At the end of the course you will understand how interdisciplinary methods can be brought to bear on controlling some of the deadliest infectious organisms on the planet and be ready to pursue your career in parasitology.

Employability
This MRes course will provide you with a range of vocational skills and prepare you for professional employment or further postgraduate PhD studies in parasitology or related disciplines (such as infectious diseases, public health and epidemiology).

You will develop strong skills in data collection and analysis, fieldwork and laboratory analysis, work in teams, and learn to write for audiences ranging from the academics to the wider public. You will improve your critical thinking and problem-solving, direct and sustain a self-initiated programme of study, and hone your project management skills to deliver a demanding combination of research, analysis, communication and presentation.

Modules

Core modules that you may study on this course include:

- Hot Topics in Parasite Control
- Infection and Immunity
- MRes Dissertation.

Hot Topics in Parasite Control
Equips you with an advanced understanding of the current theories, techniques and underpinning biological research related to parasitic disease control.

Infection and Immunity
Provides a detailed investigation into animal immunology, bacteriology, virology and parasitology both at the molecular and applied level.

For more details and the latest information on our modules, see our website.

Key Facts

Degree type: MRes

Course code: C111

Duration: 1 year (full-time)

IBERS Distance Learning

Established in 2012, IBERS Distance Learning has an excellent track record in training agrifood professionals. Our aim is to support the sector to become more sustainable and resilient by helping it to adopt circular economy approaches. Our carefully curated online modules provide you with the latest thinking in sustainability practices and technologies as well as the communication tools to allow you to pass on this knowledge effectively. Our aim is to support the sector to become more sustainable and resilient by helping it to adopt circular economy approaches.

The 'pay-as-you-go', 'pick-and-mix' format means that you can take individual modules or build up to a range of postgraduate qualifications. So, if you are interested in ideas such as shorter supply chains, waste reduction and tools to identify carbon hotspots in sectors ranging from meat and dairy to vertical farming, this could be the programme for you!

Agriculture

A Distance learning course

MRes

This degree provides an opportunity for students wishing to undertake research in any area of agriculture to engage with generic and specific skills through taught modules and supervised research training, through distance learning.

While each module covers a different area of technical expertise they all focus on the challenges facing pasture-based production systems and potential solutions. The MRes is an ideal stepping stone for those considering a DAg and/or developing the research aspect of their career.

Contact time

We have designed our training to be as accessible as possible, particularly for those in full-time employment. Each taught module runs for 14 weeks via distance learning and can be taken for your own continuing professional development or interest, or built towards a postgraduate qualification. A typical postgraduate student is expected to study for 200 hours when taking a 20-credit module. You should anticipate spending approximately 2-3 hours a week on online lectures, presentations and podcasts, and the remaining time on readings and assignments.

Modules

Core modules that you may study on this course include Research Methods and a Research Project.

You will also be able to choose from a range of optional modules, which currently include:

- Business Management for Rural Entrepreneurs
- Genetics and Genomics in Agriculture
- Grassland Systems
- Organic and Low Input Ruminant Production
- Plant Breeding
- Ruminant Gut Microbiology
- Livestock Health and Welfare
- Livestock Production Science
- Silage Science.

For more details and the latest information on our modules, see our website.

The research elements of our qualifications are carried out in your workplace with regular academic supervision. The training is web-based which means that as long as you have access to a reasonable broadband connection (and are able to stream videos such as on YouTube), you can study where and when best suits you. Learning material includes podcast lectures, e-group projects, guided reading, interactive workbooks and discussion forums, as well as assignments and e-tutorials.

Assessment

There are no exams within this course. Taught modules are assessed via course work and forum discussion. Research is monitored and assessed.

Key Facts

Degree type: MRes

Course code: D410D

Duration: Up to 5 years (Distance Learning). Also available as a 3-year Distance Learning degree.

Agrifood Innovation

A Distance learning course

MSc

The focus of this programme is on facilitating knowledge flow along the agrifood supply chain. It provides you with a detailed understanding of the challenges facing the agrifood sector and equips you with the technical and communication tools to instigate innovation and lead change.

Optional modules will allow you to delve more deeply into specific facets of the supply chain and/or to expand your repertoire of communication skills. All students will develop research skills and put these into practice via a work-based research project. Workshop-based modules usually involve the design and execution of a practical task as part of the assessed work.

Contact time

Academic-focused modules are entirely online distance learning. Each module includes recorded lectures from academics and industry experts, presentations, podcasts, e-group projects, guided readings, interactive workbooks and discussion forums, as well as assignments and e-tutorials. Workshop-based modules comprise two 2-day workshops and a 1-day final session. A typical postgraduate student is expected to study for 200 hours when taking a 20-credit module. You should anticipate spending approximately 2-3 hours a week on online lectures, presentations and podcasts, and the remaining time on readings and assignments.

Assessment

There are no exams within this programme. Taught modules are assessed via coursework (namely reports and essays, but also literature reviews, case studies, research proposals and data analysis tasks), online assignments, presentations and forum discussion. Workshop-based modules usually involve the design and execution of a practical task as part of the assessed work.

Modules

Core modules that you may study on this course include:

- Sustainable Supply Systems
- Research Methods
- Work-based Dissertation.

You will also study four optional modules from a selection available, which currently include:

- Leading Change
- Coaching and Mentoring for Leaders
- Waste Resource Management
- Facilitation for Organisation Leadership
- Controlled Environment Agriculture
- Behaviour Change
- Livestock Nutrition
- Grassland Systems
- Livestock Production
- Silage Science
- Genetics and Genomics in Agriculture
- Livestock Health and Welfare
- Low Carbon Livestock
- Business Management for Rural Entrepreneurs
- Plant Breeding.

You may choose additional modules from Swansea University with additional modules available to past or current Nuffield scholars.

For more details and the latest information on our modules, see our website.

Key Facts

Degree type: MSc, PGDip, PGCert

Course code: D67ND

Duration: Typically 3 years, but up to 5 years

Agrifood Innovation

A Distance learning course

MRes

MRes Agrifood Innovation provides access to the latest thinking around the Circular Economy and is ideal for anyone with an interest in integrating this ethos into agrifood practice or policy. Aimed at those working with or within the Welsh agrifood supply chains, this course places greater emphasis on research than on taught elements and is an ideal stepping stone for those considering developing the research aspect of their career.

Contact time

We have designed our training to be as accessible as possible, particularly for those in full-time employment. Each taught module runs for 14 weeks via distance learning and can be taken for your own continuing professional development or interest, or built towards a postgraduate qualification. A typical postgraduate student is expected to study for 200 hours when taking a 20-credit module. You should anticipate spending approximately 2-3 hours a week on online lectures, presentations and podcasts, and the remaining time on readings and assignments.

The research elements of our qualifications are carried out in your workplace with regular academic supervision. The training is web-based which means that as long as you have access to a reasonable broadband connection (and are able to stream videos such as on YouTube), you can study where and when best suits you. Learning material includes podcast lectures, e-group projects, guided reading, interactive workbooks and discussion forums, as well as assignments and e-tutorials.

Assessment

There are no exams within this course. Taught modules are assessed via course work and forum discussion. Research is monitored and assessed.

Modules

Core modules that you may study on this course include:

- Research Methods
- Research Project
- Dissertation.

You will also study two optional modules from a selection available, which currently include:

- Waste Resource Management
- Meat Processing
- Sustainable Supply Systems
- Future of Packaging
- Life Cycle Assessment and Beyond
- Controlled Environment Agriculture
- Behaviour Change
- Livestock Health and Welfare
- Genetics and Genomics in Agriculture
- Biorefining Technologies
- Precision Livestock.

For more details and the latest information on our modules, see our website.

Key Facts

Degree type: MRes

Course code: J792D

Duration: Students register for 5 years (Distance Learning) but may finish in 3 years

Animal Science

A Distance learning course

PGCert

The Postgraduate Certificate in Animal Science at Aberystwyth University will provide you with a highly informed, high quality postgraduate teaching experience in the areas of equine/animal nutrition, equine reproduction, equine behaviour and anatomy, livestock nutrition and production, as well as grassland science. You will study animal science and its application to nutrition, breeding and animal management.

This course is taught by leading scientists in their respective fields and you will learn about the latest scientific advances in these primary areas of animal and equine research. This advanced subject knowledge and qualification is highly recognised by both the animal science industry and animal-related professions.

Contact time

Our programmes have been designed to be as accessible and flexible as possible, particularly for those in full-time employment or living outside the UK. Each taught module runs over 14 weeks via distance learning and includes recorded lectures from academics and industry experts (where possible), along with guided readings, discussion forums and written assignments. You will complete three 20-credit modules from a choice of six in order to gain the Postgraduate Certificate in Animal Science.

Assessment

There are no exams within this programme. Taught modules are assessed via coursework (namely reports and essays, but also literature reviews, case studies, business plans and data analysis tasks), presentations and forum discussion.

Modules

Core modules that you may study on this course include:

- Equine Nutrition
- Equine Reproductive Physiology and Breeding Technology
- Understanding Equine Action: From Anatomy to Behaviour
- Livestock Nutrition
- Livestock Production Science
- Grassland Systems.

Equine Reproductive Physiology and Breeding Technology

Considers the application of reproductive physiology to, and the use of advanced reproductive techniques in, the management of horses for breeding.

Livestock Nutrition

Studies the principles of nutrition applied to feeding livestock to optimise growth and development for meat and dairy production.

Livestock Production Science

Examines the application of livestock science to the economic production of livestock to ensure food quality and quantity.

Grassland Systems

Studies the science of grass and forage production applied to its use as a livestock feed.

For more details and the latest information on our modules, see our website.

Key Facts

Degree type: PGCert

Course code: D312D

Duration: 12 months

Equine Science

A Distance learning course

PGCert

The Postgraduate Certificate in Equine Science will provide you with a highly informed, research-led postgraduate teaching experience in the areas of equine behaviour and anatomy, equine nutrition, equine reproduction and breeding, as well as grassland science.

Aberystwyth University is a long established, internationally recognised provider of equine courses. Studying with us will allow you to acquire the advanced subject knowledge and professional skills needed to enter the top careers in the equine industry and related professions. This distance learning course is taught by leading scientists in their respective fields and you will learn about the latest scientific advances in the primary areas of equine research. This advanced subject knowledge and qualification is highly recognised by both the equine industry and equine-related professions.

Contact time

Our programmes have been designed to be as accessible and flexible as possible, particularly for those in full-time employment or living outside the UK. Each taught module runs over 14 weeks via distance learning and includes recorded lectures from academics and industry experts (where possible), along with guided readings, discussion forums and written assignments. You will complete three 20-credit modules from a choice of four in order to gain the Postgraduate Certificate in Equine Science.

Assessment

There are no exams within this programme. Taught modules are assessed via coursework (namely reports and essays, but also literature reviews, case studies, business plans and data analysis tasks), presentations and forum discussion.

Modules

Core modules that you may study on this course include:

- Equine Nutrition
- Equine Reproductive Physiology and Breeding Technology
- Understanding Equine Action: From Anatomy to Behaviour
- Grassland Systems.

Equine Nutrition

Studies the principles of nutrition as applied to feeding the horse for optimum growth, development and performance.

Equine Reproductive Physiology and Breeding Technology

Considers the application of reproductive physiology to, and the use of advanced reproductive techniques in, the management of horses for breeding.

Understanding Equine Action from Anatomy to Behaviour

Provides an understanding of equine anatomy, physiology and behaviour to optimise equine welfare, in particular performance horses.

Grassland Systems

Studies the science of grass and forage production applied to its use as a livestock feed.

For more details and the latest information on our modules, see our website.

Key Facts

Degree type: PGCert

Course code: D392D

Duration: 12 months

Livestock Science

A Distance learning course

PGCert

Food security is vital to the success and stability of any country and its population. Meeting the world's increasing demand for food is one of the most important challenges of the 21st century.

Livestock Science is, and will remain, central to meeting this challenge. Not only is food quantity important, but so too is quality, with consumers continuing to demand a high quality product at an affordable price. These demands can only be met by the development and implementation of innovative concepts and ideas by suitably qualified graduates, who will also then drive forward these exciting developments in livestock science and production.

The Postgraduate Certificate in Livestock Science will provide you with a highly informed, high quality postgraduate teaching experience in the areas of livestock nutrition and livestock production, as well as grassland science. This course is taught by leading scientists in their respective fields and you will learn about the latest scientific advances in these three primary areas of livestock and animal research. This advanced subject knowledge and qualification is highly recognised by both the livestock/animal science industry and farming professions.

Contact time

Our programmes have been designed to be as accessible and flexible as possible, particularly for those in full-time employment or living outside the UK. Each taught module runs over 14 weeks via distance learning and includes recorded lectures from academics and industry experts (where possible), along with guided readings, discussion forums and written assignments. You will complete three 20-credit modules in order to gain the Postgraduate Certificate in Livestock Science.

Assessment

There are no exams within this programme. Taught modules are assessed via written assignments (case studies, research proposals, research critiques, essays and reports).

Modules

Core modules that you may study on this course include:

- Livestock Nutrition
- Livestock Production Science
- Grassland Systems.

Livestock Nutrition

Studies the principles of nutrition applied to feeding livestock to optimise growth and development for meat and dairy production.

Livestock Production Science

Examines the application of livestock science to the economic production of livestock to ensure food quality and quantity.

Grassland Systems

Studies the science of grass and forage production applied to its use as a livestock feed.

For more details and the latest information on our modules, see our website.

Key Facts

Degree type: PGCert

Course code: D321D

Duration: 12 months

Sustainable Agriculture

A Distance learning course

MSc, PGDip, PGCert

This degree focuses on increasing efficiency and reducing environmental impact within the extensive pasture-based production sector.

The programme provides flexible, accessible, postgraduate level training for people employed in the agri-food sector. Training comprises distance learning modules and work-based research projects. These are accessible as CPD or as credit-bearing units, which can be built towards a range of postgraduate qualifications.

Contact time

We have designed our training to be as accessible as possible, particularly for those in full-time employment. Each taught module runs over 14 weeks via distance learning which can be taken for your own continuing professional development or interest or built towards a postgraduate qualification.

A typical postgraduate student is expected to study for 200 hours when taking a 20-credit module. You should anticipate spending approximately 2-3 hours a week on online lectures, presentations and podcasts, and the remaining time on readings and assignments. Learning material for each 14 week module includes recorded lectures from academics and industry experts, presentations, podcasts, e-group projects, guided readings, interactive workbooks and discussion forums, as well as assignments and e-tutorials.

Assessment

There are no exams within this course. Taught modules are assessed via coursework (namely reports and essays, but also literature reviews, case studies, business plans and data analysis tasks), presentations and forum discussion.

Modules

Core modules that you may study on this course include Research Methods module and the Dissertation.

You will also study a range of optional modules from a selection available, which currently include:

- Business Management for Rural Entrepreneurs
- Genetics and Genomics in Agriculture
- Grassland Systems
- Plant Breeding
- Livestock Health and Welfare
- Livestock Production Science
- Silage Science
- Low Carbon Livestock
- Soil Science.

The following additional modules are only available to past or current Nuffield Scholars:

- Nuffield Scholarship Project (New Awards)
- Nuffield Scholarship Project (Post-Completion).

For more details and the latest information on our modules, see our website.

Key Facts

Degree type: MSc, PGDip, PGCert

Course code: D413D

Duration: Up to 5 years (Distance Learning). Also available as a 3-year Distance Learning degree (D413D3).

Sustainable Horticulture

A Distance learning course

MSc, PGDip, PGCert

Sustainable Horticulture is a distance learning programme designed for work-based horticulture practitioners who wish to develop their skills and knowledge in scientific horticulture, innovation, conservation and sustainability.

The course is offered in collaboration with the National Botanic Garden of Wales (NBGW) and the Centre For Alternative Technology (CAT) Graduate School for the Environment. Students will benefit from Aberystwyth University's long tradition of innovative plant science research, NBGW's expertise in plant cultivation, propagation and conservation and CAT's globally respected approach to sustainability. Each institution has a world-leading reputation in their respective areas of expertise. This collaborative approach will equip tomorrow's horticulturalists to play their part in creating a more sustainable horticulture sector.

This course can be taken entirely by distance learning with the option of incorporating residential modules at CAT's environmental education centre in Wales.

Contact time

We have designed our training to be as accessible as possible, particularly for those in full-time employment. Each taught module runs over 14 weeks via distance learning which can be taken for your own continuing professional development or interest or built towards a postgraduate qualification. A typical postgraduate student is expected to study for 200 hours when taking a 20-credit module. You should anticipate spending approximately 2-3 hours a week on online lectures, presentations and podcasts, and the remaining time on readings and assignments.

Assessment

There are no exams within this programme. Taught modules are assessed via coursework, such as reports, essays, interactive tasks (including presentations), case studies and business plans.

Modules

Core modules that you may study on this course include:

- Introduction to Sustainability and Adaptation
- Sustainability and Adaptation Concepts and Practice
- Horticultural Science
- Conservation Horticulture
- Research Methods
- Dissertation.

You will also study a range of optional modules from a selection available, which currently include:

- The Science of Sustainable Food Production
- Food Production and Consumption
- Restoration Ecology
- Ecological Assessment
- Plant Breeding
- Controlled Environment Agriculture
- Life Cycle Assessment and Beyond
- Sustainable Supply Systems.

For more details and the latest information on our modules, see our website.

Key Facts

Degree type: MSc, PGDip, PGCert

Course code: K341D

Duration: Up to 5 years (Distance Learning).

MPhil, PhD, DAg, DProf

We offer MPhil, DAg, PhD and DProf degrees where students are guided and trained in the wide range of skills necessary to become 21st century research scientists.

Our students are integrated within a multi-disciplinary research environment encompassing both fundamental and commercially-linked research in agricultural, rural, environmental and biological science disciplines.

We carry out internationally important science in:

- plant, animal and microbial sciences
- agriculture
- cell biology and physiology
- biochemistry
- genomics
- bioinformatics
- parasitology
- marine and freshwater biology
- ecology
- plant and animal breeding/reproduction
- evolutionary processes.

MPhil and PhD

These focus on research projects and involve in-depth study within a specific field which is compatible with the research interests of the University. Work produced is original and publishable work, the results of which are presented in a thesis and through an oral examination. Full-time research students must be in Aberystwyth for at least 44 weeks of the year.

DAg and DProf

These Professional Doctorate programmes produce qualifications which, whilst being equivalent in status and challenge to a PhD, are more appropriate for those pursuing professional rather than academic careers. Our Professional Doctorate programmes comprise three taught modules carried out via distance learning and two work-based research projects supported through live and virtual supervisory meetings. While the primary academic focus is on the completion of an advanced piece of research, the collaborative route provided by a work-based research project provides an ideal opportunity to embed new knowledge in the workplace and ensure that research is relevant to industry.

For further information see our How to Apply pages, or contact us.

Our research

Postgraduate research training and taught Masters research projects are completed with supervisors aligned with one or more of the Department's research groupings which collectively address four key societal challenges: sustainable agriculture, climate change, animal and human health, and biodiversity.

The research groupings are:

Sustainable agriculture & healthy food

- **Sustainable grassland agriculture** - understanding the impact of livestock products on the environment, developing the use of forage legumes to provide sustainable protein, conservation of soil fertility and ecosystem services.
- **Phenomic science & controlled environment agriculture** - understanding how plants respond to their environment, in the field, or in controlled environments.
- **Plant breeding for the future** - developing new crop varieties using conventional and new molecular breeding technologies to enhance performance and quality traits, reducing the environmental impact of agriculture, and accelerating progress for tackling abiotic and biotic stresses.
- **Diet and health** - linking food materials with the effect of diet and physical activity on health and disease, ageing and the management of chronic medical conditions.

Climate Change adaptation & mitigation

- **Greenhouse gas reduction in livestock agriculture** - helping the UK meet its net zero GHG emissions target by 2050.
- **Crops for sustainable energy and materials** – developing sustainable sources of biomass for renewable energy and materials, whilst decreasing GHG emissions (bioenergy with carbon capture and storage BECCS) and delivering ecosystem benefits including carbon sequestration.
- **Natural resources and the circular economy** – minimising waste through regenerative technologies, such as through biorefining (in the BEACON Biorefining Centre) and the recapture of components.
- **Marine environmental impacts and remedies** - understanding the responses of species to changing environments, and how changes in demographic change, geographical distribution, and genetic diversity interact with natural and anthropogenic stresses to affect the sustainability of marine systems and resources.

Interconnected animal & human health

- **Parasitology and helminth control** – studying a range of infectious diseases caused by viruses, bacteria, protozoa, microsporidia and helminths; working with partners from developed, low and middle income countries spanning academic, government and private organisations.
- **Bovine TB detection, protection and control** - understanding the biology of Mycobacterium bovis infection to underpin the development and use of new diagnostic tests and vaccines, and providing expert advice and support to government and other key stakeholders on bovine TB eradication.
- **Epidemiology** – studying the distribution and determinants of health-related events in human and animal populations (especially in farmed and wild animals in Wales) at both macroscopic and microscopic scales by investigation at the level of population rather than individuals.
- **One health and zoonotic diseases** - working on projects in Wales and internationally to improve health and wellbeing through the prevention of risks and the mitigation of effects of crises at the interface between humans, animals and their various environments.

Exploring & conserving biodiversity

- **Conservation and management of natural resources** - deepening our knowledge of how management impacts upon natural capital and ecosystem service provision e.g. the provision of drinking water and flood mitigation, soil carbon sequestration and storage, landscape and heritage management, and biodiversity.
- **Understanding and restoring ecosystems and their services** - studying how natural resources have been damaged by human activity or are affected by global climate change. Developing strategies for restoration including bioremediation of polluted systems, land management to promote water retention, adaptation of plant community composition for resilience to climatic extremes, and interventions to prevent species invasion.
- **Ecology and evolution, populations to ecosystems** - understanding how climate change variables (temperature, CO_2, ocean acidification and ultraviolet radiation) will impact on ecosystems, and developing strategies for species, habitat and ecosystem conservation and management.

Research highlights

The Veterinary Prescribing Champions Network

Led by Dr Gwen Rees, the Veterinary Prescribing Champions Network works to help vets prescribe antibiotics responsibly and increase their effectiveness. Through training, applying new technology, data gathering and improving understanding, the programme encourages and demonstrates ways to reduce the need to use antibiotics and the risk of antimicrobial resistance developing.

The programme has already given us new insights into antimicrobial resistance development and spread, and the network is making a real difference to how antibiotics are used here in Wales.

Growing crops indoors could be key part of future food security

Vertical farming is the process of producing food by growing it in stacked layers within controlled indoor environments. This method helps farmers to produce much more on the same amount of land and reduce the environmental impact, and to avoid the future challenge presented by extreme weather events.

This technology is vital to tackle potential food insecurity because of our changing climate. Vertical farming could be a key part of our future food production systems. One of the aspects we are looking at is the ability to switch food production into controlled environments at speed.

Touchscreens for Horses

Cognitive testing allows specific regions of the brain to be investigated and, using touchscreen technology in conjunction with specific software, provides a unique tool to measure equine cognition and brain function under different environmental conditions.

Current research at Aberystwyth is assessing how novel environments can affect equine sleep and how this subsequently manifests as changes in cognition. Further research using the technology will assess whether depression in horses can be detected through changes in cognitive ability.

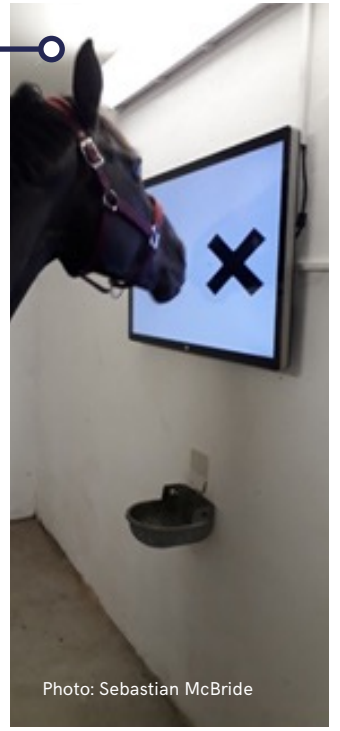
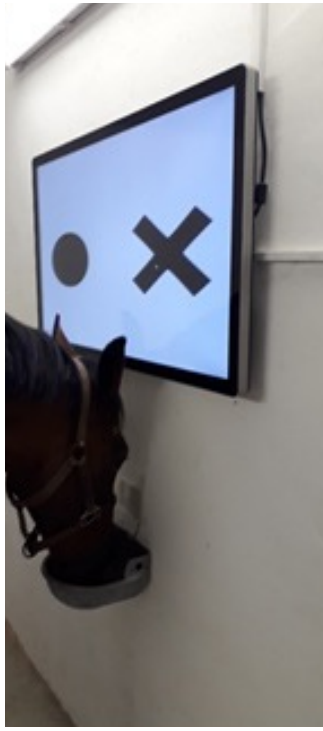


Photo: Sebastian McBride



Environmental DNA analysis to identify liver fluke transmission hotspots on farms

Our scientists have developed an innovative method for analysing DNA in environmental samples to detect the presence of fluke parasites which infect cattle and sheep and their intermediate snail host.

This technique is now used in a major research project investigating liver fluke infection dynamics on Welsh farms and farmer perception of disease transmission hotspots and the feasibility of control strategies, all of which will lead to the development of new liver fluke infection risk models and sustainable control guidelines.

Photo: Rhys Jones

The Queen presents award to Aberystwyth University for parasite research

Queen Camilla presented a prestigious award to Aberystwyth University for its pioneering parasitology work at a ceremony in Buckingham Palace. The royal honour recognises the work of scientists at the University's Department of Life Sciences who specialise in a particular group of parasitic flatworms which cause devastating diseases such as Schistosomiasis in people and Fasciolosis in livestock.

Schistosomiasis is a tropical disease usually spread through contact with contaminated fresh water, killing an estimated 12,000 people and infecting more than 200 million individuals every year. Fasciolosis affects more than 300 million cattle and 250 million sheep world-wide, at a cost of over £2.5 billion a year to the agriculture industry.

Aberystwyth University Vice-Chancellor Professor Jon Timmis receiving the award from Her Majesty the Queen at Buckingham Palace.

Can green tea prevent age-related disease?

Aberystwyth University scientists are testing how nutrients in green tea can affect age-related diseases by monitoring people's brain activity. As we age our body becomes less able to absorb nutrients from our diet and this contributes to some of the health difficulties we may experience as we get older.

"Improving older people's health is a major focus of much of our dietary, health and future foods work here in Aberystwyth. We know that diet can make a big difference in improving people's welfare, reducing illness and in turn lessening pressures on our health service. That is why this type of research is so important." (Dr Amanda Lloyd from the Department of Life Sciences)

Secret Arctic microbial night life investigated by Aberystwyth scientists.

Aberystwyth University academics are visiting Svalbard in the Arctic to investigate the night life of microbes. Their research aims to give a clear picture of how life survives each season on Arctic glaciers and what this means for their ecology as they face a warming Arctic. Unlocking the secrets of the microbes that live in the glaciers in the Arctic has the potential to reveal future medicines, and even inform us about how to wash our clothes using more environmentally friendly products.

Dr Arwyn Edwards researching on Svalbard. Photo: Klemens Weisleitner.

£1 million for early lung cancer diagnosis test research.

Scientists' work to develop a new rapid diagnostic kit to detect lung cancer has received a £1 million grant boost. Lung cancer affects almost 50,000 people a year in the UK, kills more people than any other cancer and costs the NHS more than £2.4bn a year. The team are developing a new rapid diagnostic kit to quickly identify people most likely to benefit from scanning. They have already identified biomarkers in urine that can diagnose a number of other cancers and diseases. It can also identify what stage the disease has reached in a patient.

Antibiotic pollution disrupts the gut microbiome and blocks memory in aquatic snails

Wastewater entering our streams and rivers contains a cocktail of chemicals used to treat humans and animals. Dr Sarah Dalesman's research demonstrates that the gut microbiome of aquatic animals can be altered by antibiotic pollution and could be detrimental to their survival.

A student from the Marine and Freshwater Biology course, Ignacio A. Cienfuegos, worked on this project during his degree. The researchers found the antibiotics altered the gut microbiome substantially and changed the abundance of bacteria that have been found to relate to healthy memory formation in other animals, including humans.

Snail (*Lymnaea stagnalis*). Photo: Dr Sarah Dalesman

Linear Infrastructure Ecology to help protect wildlife

Human infrastructure, such as roads and power lines, has countless adverse effects on global biodiversity and there are still many knowledge gaps regarding the extent of impact and how to mitigate them. Aberystwyth scientists help to fill these gaps by working on species of high conservation concern in South Africa (mainly focusing on primates) and the UK to support species conservation efforts.

Photo: Dr Bibi Linden

Antarctic seals help Aberystwyth scientist monitor ocean warming

How far and how fast the warm current is flowing under Antarctic glaciers, melting them from below, will affect how quickly they collapse. Their disappearance could lead to a catastrophic sea-level rise, leaving major coastal settlements across the world underwater. Even with advanced equipment, measuring the temperature of deepwater in Antarctica can be extremely difficult – especially under the ice. However, Weddell and elephant seals regularly swim through the exact waters that scientists want to monitor. The Aberystwyth researcher located and tagged seals as part of this international effort to understand the effects of climate change in polar regions. The data from the seals was received via satellite when the seals surfaced above the ocean.

Elephant Seals in the Antarctic. Photo: Dr Guilherme Bortolotto

Aberystwyth nest box project looks at climate change impact on bird breeding

The purpose of the study is to improve our understanding of the effect that climate change has on the relationship between different species, particularly woodland birds. We know that a warmer spring is already leading to birds breeding earlier, and we hope to understand more about how this might affect the competition between different bird species. Students on the Wildlife Conservation degree course are helping with the project.

Department of Life Sciences,
Penglais Campus,
Aberystwyth University,
Aberystwyth,
Ceredigion,
SY23 3DA, UK

+44 (0) 1970 62 1986

DLScontact@aber.ac.uk

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