PRIFYSGOL ABERYSTWYTH UNIVERSITY

IBERS
Athrofa y Gwyddorau Biolegol, Amgylcheddol a Gwledig
Institute of Biological, Environmental and Rural Sciences

IBERS Distance Learning: Agriculture Programme

MSc in Sustainable Efficient Food Production
MRes in Agriculture
Doctor of Agriculture

A guide

2020-2021

Equip yourself with the knowledge and skills to help make agriculture sustainable and efficient

Contents

Introduction

This booklet will give you a flavour of the agricultural postgraduate distance learning offered by the Institute for Biological, Environmental and Rural Sciences (IBERS) at Aberystwyth University. Our modules offer you access to cutting-edge research findings and equip you with clear overviews of topics relevant to agriculture and the environment. The focus is largely on red meat and milk production systems; on increasing their efficiency and reducing their impacts. All of our teaching material is online, which means that, provided you have a reasonable internet connection, you can study with us from wherever you are in the world. The pay-as-you-go format means that you can take individual modules or build up to a range of postgraduate qualifications.

IBERS, Aberystwyth University (AU)

The university was established in 1872 in the historic Mid-Wales coastal town of Aberystwyth. IBERS has a unique position as a research and teaching institute within the university. As a research institute it traces its origins back to the Welsh Plant Breeding Station (WPBS) which was established in 1919. Its operational budget is approximately £30M per year, of which two thirds is dedicated to research. IBERS is a world leader in forage and ruminant research and this expertise feeds directly into its agricultural teaching programmes.

Who are we?

The IBERS Distance Learning (IBERS DL) programme, which focuses on agricultural production, has been successfully delivering training to agricultural professionals since 2012. Our regularly updated postgraduate programme reflects the university's research strengths in animal-plant-microbe-soil interactions, sustainability and efficiency.

The last independent review of research quality (the Research Excellence Framework) looked at IBERS' and our strategic partner's (Bangor University) research jointly and rated 78% of research in the areas of Agriculture, Veterinary and Food Science as 'world-leading' or 'internationally excellent'. This programme capitalises on this strength.

Is this programme for me?

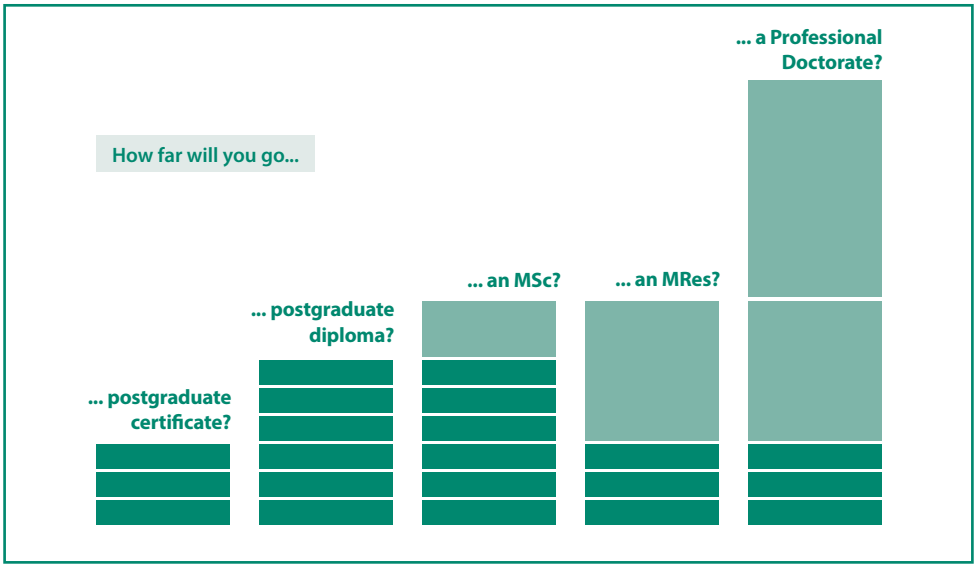
These courses are popular amongst agricultural consultants, lecturers, researchers, sales teams and policy makers, as well as forward-thinking farmers. If you work in this sector, or aspire to, this course is the ideal way to ensure your knowledge is up to date. It allows you to gain postgraduate qualifications by studying part-time while you are working.

How is the training delivered?

We have designed our training to be as accessible as possible to students who are working and/or are unable to come to the UK. Each topic comprises a 14 week distance learning module. These can be taken individually for your own continuing professional development or interest, or you can build them into a postgraduate qualification.

The research elements of our masters and doctoral qualifications are carried out in your work place or at a local institute with regular academic supervision.

If you are considering studying for an MSc, MRes or Doctoral qualification you will be expected to take the 'Research Methods' module (see the 'Qualifications' section at the end of this guide).



Go to http://users.aber.ac.uk/rjs to view an interactive online sample of our training materials.

How long will it take?

Flexible Part-time: From the initial start date you have a maximum of 5 years in which to fit as many or as few modules as you wish. If, however, you are undertaking a part-time doctorate, you are permitted an additional two years, giving seven years available in total. MSc cannot be completed in less than two years.

3 Years Part-time: This route has been designed for an MSc or MRes students in receipt of a UK student loan, which requires completion within 3 years. You will be expected to study three modules per year, either consecutively or simultaneously (where appropriate).

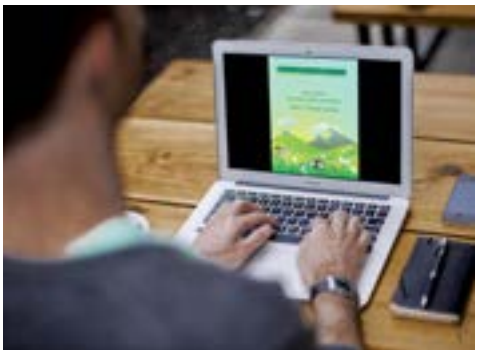
When can I start?

Modules are delivered in a rolling programme, with start dates in February, June and October.

You may begin with whichever of your chosen modules is most convenient. The blocks are repeated each year to allow you to cover all your module choices over your years of study: if you are unable to take one in any year you can take it in the next. If you are working full-time we strongly advise against taking more than one module at the same time, at least until you have completed one and are aware of the workload entailed.

Modules Timetable - at a glance

Modules starting October	Modules starting February	Modules starting June
Ruminant Nutrition	Ruminant Production	Farm Business Management
Ruminant Health and Welfare	Silage Science	Organic and Low Input Ruminant Production
Grassland Systems	Plant Breeding	Ruminant Gut Microbiology
Genetics and Genomics in Agriculture		
Research Methods	Research Methods	Research Methods



How much work will I need to do?

Our distance learning modules are designed to be flexible so that, if necessary, you can fit studying around your work and other commitments. A typical master's student is expected to study for 200 hours when taking a 20 credit module. Our students report spending 10 to 15 hours a week per module studying. Obviously the more time and effort you can put in the more you'll benefit from studying the module and the better your grades are likely to be.

Modules available

Modules starting every October

Ruminant Nutrition

You will study the fundamental physiological and microbiological principles underpinning ruminant nutrition. The module then explains the science which enables the characteristics of meat and milk to be modified: the design of animal nutrition experiments; ruminant ration formulation and evaluation; nutrient digestion and metabolism; microbial populations and their ecology; and metabolism of carbohydrates, protein and lipids. You will also look at the latest research into reducing the environmental impacts of ruminants through their nutrition.

Ruminant Health and Welfare

This module draws on the expertise of Aberystwyth University's Vet Hub and other veterinary research centres. The first half looks at the general legislation and management of ruminant health and welfare across three sectors: dairy, beef and sheep. The second half allows you to choose which of these sectors you will be assessed on. Depending on which sector you choose you will cover the latest research on the diseases of most concern and will look at how welfare is measured and could be improved in that sector.

Grassland Systems

This module looks at the range and distribution of temperate grassland and forage crops. Nutrient management and environmental protection are themes throughout, as are strategies for grazing and forage preservation. The role of plant breeding and management is investigated. You will evaluate the management requirements of a range of grassland systems and the factors that underpin forage cropping programmes. The module's content is significantly influenced by current research at IBERS.

Genetics & Genomics in Agriculture

This module is designed to give those with little understanding of genetics a practical knowledge of the principles and technologies that underpin breeding programmes. It focuses on the challenges facing land-based production in the 21st century and on the roles that emerging technologies play in meeting these challenges sustainably. After detailing the broad objectives and methods involved in breeding programmes, the module allows you to follow a specific crop or animal breeding pathway. You will gain an understanding of the methodologies applied in molecular and population genetics, as well as in related disciplines such as proteomics and metabolomics, allowing you to conceptualise and apply these concepts to further agricultural production.

Modules starting every February

Ruminant Production

The focus of this module is on how to increase the efficiency of both intensive and extensive ruminant production systems. It draws upon research within IBERS and elsewhere to cover topics such as the basics of performance measuring and the latest research on ruminant genetics and how it can be used to reduce the environmental impact of production. You will explore the fundamental genetics and physiology that underpin animal production in terms of: reproductive technology; genetic improvement; dairy cattle production systems; meat production systems; meat and milk quality; disease prevention and management.

Silage Science

This module develops your knowledge of modern forage and grain ensilage systems, giving you the skills to integrate recent research into your work. It examines: silage evaluation; fermentation; microbiology; inoculant development; pathogen transfer; and food safety. Its focus is primarily on pasture-based systems, but processes for grain and non-arable crops will also be described and evaluated.

Plant Breeding

This module is designed to give those with an interest in plant breeding a comprehensive understanding of what it takes to bring a variety from concept to market. Featured crops include: beans, peas, oats, ryegrass, clover and energy crops. We consider all aspects of what makes a commercial plant breeding program successful. Real datasets will demonstrate the challenges a breeder faces when making selections. You will undertake case studies to look in depth at the process of breeding a crop of your choice.

Modules starting every June

Farm Business Management

This module gives you the skills to analyse, carry out and revise farm business plans. It looks at all aspects of farm planning, from the accounts to the physical aspects which anyone dealing with farms should be aware of. You will learn how to develop a robust and logical plan and will create a plan of your own. Because the module requires knowledge of Microsoft Excel, a prerequisite to this module will be the successful completion of an Excel test given during registration. To help students with limited experience of Excel spreadsheets, the module also contains a short online course on using Excel.

Organic and Low Input Ruminant Production

This module examines the concepts behind ruminant production in a low input or organic system, primarily in temperate contexts. It considers alternative methods of production, from unique forages and sward mixtures to interesting animal breeds that could provide a more tailored product for niche markets. The course also looks at natural methods of disease control that can be adopted by low input or organic systems.

Ruminant Gut Microbiology

This module explores the fundamental research that is developing our understanding of the anatomy and environmental conditions of the rumen, covering the negative and positive effects of rumen digestion on productivity. You will explore the function and importance in the rumen of bacteria, protozoa, fungi and archaea. The study area will investigate both the traditional culture-based and the modern molecular-based methods used to investigate rumen microbiology and will review ways of manipulating rumen fermentation to improve productivity whilst decreasing the environmental footprint of ruminant agriculture.

Postgraduate Qualifications

What qualifications can I gain?

You are welcome to take only one or two modules for your own interest. However, if you would like a qualification you will need at least three.

The Research Methods module is compulsory if you are intending to undertake a research component.

Qualifications available are:

Master's Degree (MSc) in Sustainable and Efficient Food Production:

— You may take any five modules, plus the Research Methods module (a total of 120 credits) plus you will submit a dissertation (60 credits). This scheme allows you maximum flexibility if you wish to develop and update your knowledge within specific areas of ruminant production.
While each module covers a different area of technical expertise, they all focus on the challenges facing pasture-based production systems, and on their potential solutions.

Postgraduate Certificate (PGCert) in Sustainable and Efficient Food Production:

— Any three modules (60 credits).

Postgraduate Diploma (PGDip) in Sustainable and Efficient Food Production:

— Any six modules (120 credits).

Research Masters (MRes) in Agriculture

— A 'Research Masters' programme places a greater emphasis on research, rather than on taught elements. If you undertake the MRes you will need to pass any 2 modules plus the Research Methods module. You will then work with designated supervisors on a 120 credit dissertation, as described overleaf.

Professional Doctorate: Doctor of Agriculture (DAg)

— The aim of our Professional Doctorate programme is to offer a qualification which, whilst being equivalent in status and challenge to a PhD, is more appropriate if you are pursuing a professional rather than an academic career. It provides a career development path but it also offers a route for industry to engage in meaningful research.
The doctoral route starts with the MRes (see above) which forms Part I of the doctorate. Part II is then undertaken for a minimum of three years (part-time) or two years (full-time) and comprises a longer thesis (up to 60,000 words). This thesis will involve experimentation and must embody the methodology and results of original research. It should, ideally, build upon your Part I dissertation.

Developing your Research Skills and Ideas

Research Methods Module: compulsory for MSc, MRes and DAg students

This module runs three times a year and is compulsory for anyone who will be undertaking a work-based research project. It can be taken any time before you start your dissertation.

This module provides a framework for developing your research skills in the context of your own research question. The IBERS DL office will match you up to a tutor and to an academic supervisor whose research field is in your area of interest. Your tutor and academic supervisor will then guide you as you develop your ideas.

Alongside evolving your own research ideas you will develop skills in:

- ✓ Research design
- ✓ Scientific literature reviews
- ✓ Looking at the wider context of your research
- ✓ Ethical considerations in research
- ✓ Statistics
- ✓ Evaluating and planning data collection

The module will culminate with you designing a research proposal, in collaboration with your employer and supervisor, which you can use as the basis of your dissertation or thesis.

Research Project for MSc, MRes and DAg Students

The collaborative route provided by a work-based research project provides an ideal opportunity to facilitate knowledge exchange between academia and industry.

If you are self-employed, you will want to undertake research which is closely aligned to your business. Likewise, if you are an employee it is crucial that your employer is supportive of both the research aims and the time commitment your proposed research will involve. Whilst the primary academic focus is on your completion of an advanced piece of research, embedding this research within your place of work will contribute to the educational aim of the programme and provide potential opportunities for direct and effective knowledge exchange with your company.

Two dissertation routes available through this programme

60 Credit Dissertation – this forms the research component of the Masters (MSc). It will normally be 12,000 – 15,000 words in length, with a maximum of 20,000 words. Part-time students should expect to complete their dissertation in a year. Full-time students should anticipate spending 3-6 months on their dissertation.

120 Credit Dissertation - approximately 20,000 words in length, this forms the bulk of the Research Masters (MRes) and is the 'short thesis' component of the Professional Doctorate (DAg). We anticipate that most part time students will take two years to complete their Masters' dissertation. Full-time students should aim to complete in 6 to 9 months.

Both dissertations build on the research proposal developed in the 'Research Methods' module. You will be provided with structured academic support, enabling you to carry out applied research at work.

The milestones within both types of dissertation

- Further development of your research proposal
- Deeper development of your literature review
- Carrying out your research competently and efficiently
- Evaluating your results using an appropriate statistical analysis
- Presenting and discussing your findings
- Producing a learned report of the investigation in the form of a dissertation in accordance with University guidelines

How much does it cost to be a distance learner with IBERS?

Fees are as follows:

Note: fees are paid per module and may be subject to change (please check at: https://ibersdl.org.uk/registration/fees/)

Component Parts	Fees
Distance Learning Modules	£750
60 Credit Dissertation	£1,800
120 Credit Dissertation for MRes and/or DAg Part 1	£4,050
Professional Doctorate Research (annual fee)	£1,950
Full Course Costs	
MSc or MRes	£6,300
DAg – if taken over 5 years	£10,050

International Scholarships of up to 80% off:

A limited number of IBERS scholarships are available. Scholarships will be awarded to eligible students based on merit and are awarded per module.

For more scholarship details, please see

https://ibersdl.org.uk/

IBERS DL Team at Aberystwyth University

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DL Coordinator
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Dr Sarah Watson-Jones

Lecturer
Dr Dylan Philips

Lecturer
Dr William Stiles

Lecturer
Dr Cate Williams

Lecturer
Dr Peter Wootten-Beard



Student Testimonials

"I have learned that there are huge steps forward being identified in the way we can develop ruminant products that are more efficient and environmentally beneficial." - **Kimberley Glover**, Business Development Manager, Wynnstay Feeds. (*Ruminant Nutrition module)*

"Great learning experience with knowledgeable lecturers." - **Sian Spear**, Farm Worker. (*Genetics and Genomics module)*

"Already recommended this module to others." - **Mike Chown**, Ruminant Products Sales Manager. (*Ruminant Gut Microbiology module)*

"This is the best experience I have had of higher education distance learning. I was extremely well supported and advised and I am looking forward to continuing." - **Sara Worrall**, International Charity Coordinator. (*Organic & Low Input Ruminant Production module)*

"I will be able to set up a client orientated plant breeding programme involving local researchers and farmers." - **Molly Allen**, Plant Breeder, Uganda (*Plant Breeding module*)

"In my job is very necessary to know about the process for making silage especially because this a topic for development in my country." - **Javier Castillo Sierra**, Agri researcher, Colombia (*Silage Science Module*)

"I will look at incorporating this into our training and agent sales team support so they're encouraging good on farm practices with young-stock" - **Natalie Ireland**, Senior Product Development Scientist at Tangerine Holdings. (*Ruminant Production module*)

"This module allowed me to make some new links between my specialism of agronomy and nutritional elements [of grass]. [Research findings of particular significance were] the GHG footprints of livestock systems" - **Jason Hendy**, Agronomist. (*Grassland Systems module*)

"Stats were clearly described and made them seem less scary! I have done a lot of stats in the past but always in more of an 'enter the information and wait for an answer' type of way. The stats part of the module explained why things work and I have a much better understanding" - **Frances Titterington**, Higher Scientific Officer, Agri-Food and Biosciences Institute, N. Ireland (*Research Methods module*)

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https://ibersdl.org.uk/