



# FdSc Agriculture with Mechanisation

<b>UCAS code</b>	D493
<b>Institution code</b>	H12
<b>Duration</b>	3 years (full-time) including a one-year work placement. A two year programme is available for applicants with at least two years, full-time relevant work experience.
<b>Start date</b>	September 2021
<b>Location</b>	<a href="#">Harper Adams University campus</a> (and location of work placement)*

## The course

As farms become larger and agricultural production systems more efficient they become increasingly mechanised. The industry needs highly skilled graduates who understand how agricultural machines and mechanised systems operate, and how machinery should be effectively managed on farms and within contracting businesses. These courses provide students with a thorough grounding in agriculture and mechanisation.

## Work experience

Agriculture applicants are required to have a minimum of 10 weeks practical experience on a commercial farm by 1st August in the year in which they enter the course. This can be part-time work, accumulated over weekends and vacations, and does not have to be completed as a 10 week block. Despite the COVID situation, opportunities for work experience in agriculture continue to be available and where possible applicants are strongly encouraged to gain the required practical experience as this will be of benefit to them in the longer term in understanding the industry, setting studies in context and placement applications.

However, the University recognises the challenges that the COVID situation may present in relation to gaining work experience and applicants can be reassured that if they are not able to meet the work experience requirement for 2021 entry, that this will not prevent them from gaining their place, provided that they meet any academic offer.

## Access to Agriculture Programme

Applicants to Agriculture courses who are likely to meet the academic entry requirements, but who are identified as having minimal/no practical experience, and/or who are unlikely to meet the minimum practical experience requirements due to non-farm/non-rural background, and/or lack of appropriate contacts, can benefit from the [Access to Agriculture Programme](#) to gain the necessary practical experience in their first year of study.

## Duration

3 years (full-time) including a one-year work placement. A two year programme is available for applicants

with at least two years, full-time relevant work experience. Please contact [Admissions](#) for further information on this option.

## A-level entry requirements

- Offers tend to be in the region of **72 - 88** UCAS points (min 2 x A2 passes)
- Students should typically be studying **2 subjects at A2 level** to be considered
- General Studies and Critical Thinking are encouraged but **not** included in grades required
- 10 weeks relevant work experience is required by 1st August
- **4 GCSEs at grade C/4 or above**, including English Language, Maths and a Science
- **Biology A Level** (or equivalent) preferred (but not mandatory)
- Applicants can expect to receive offers including specific grades in specific subjects (for example, a B or C at A level, or an M or D for BTEC modules)
- Key Skills (and other level 2 variants) and First Certificates/Diplomas are not accepted in place of GCSE passes
- When combining qualifications no more than one Subsidiary Diploma or Diploma (or comparable qualification such as an Extended Certificate) will be considered alongside A levels (two A levels for BSc)
- Overseas applicants please check our [English Language Requirements](#)
- All suitable applicants are expected to attend an interview which will form part of the selection process
- More information about the work experience required for this course can be found by clicking the link below  
[Find out more about work experience](#)
- We have developed a range of measures and initiatives to give everyone the best chance to access our undergraduate degree programmes. The main feature of **Access to Harper** is our contextualised offer scheme. A contextualised offer is an offer which is reduced, by one grade or more from the standard entry requirement and is made to those applicants who may have experienced personal circumstances which put them at a disadvantage during their education, such as attending a low achieving school, living in an area of low participation in Higher Education or being a Care Leaver. The aim of this is to make the University more accessible for those applicants who may not have previously thought that they were eligible to apply. We have also introduced reduced entry requirements for those applicants who are over 21 years of age and further initiatives to make the application process easier for those applicants who need it.

To check if you qualify please visit the [Access to Harper](#) page.

*Note: Entry Requirements are for guidance only, please check the UCAS website or contact Admissions for further information.*

## Work placement

FdSc students undertake placement in their second year. You will enjoy a year of paid employment in a business related to your career aspirations and experience. Recent placement employers have included machinery dealerships or manufacturers such as Weaving Machinery, John Deere (both in the UK and their European HQ in Mannheim, Germany), Claas, CNH and Kubota, in roles as machinery demonstrators, dealer technicians, machinery testing or sales. Several commercial scholarship opportunities, linked to placement, are available to apply for with sponsoring companies paying a significant amount towards the tuition fees of successful applicants. Agriculture students from a family farm wishing to undertake a farm placement are required to work at least 50 miles from their home farm and are not usually normally permitted to return to previous employers.

## Teaching and learning

### What you study

All agriculture students share a common first year, studying the same modules; this allows students to change course during the first year.

In the first part of the course the focus is on practice i.e. what goes on on-farm, and underpinning science and business principles. Areas of study include animal and crop production systems, agricultural science, an introduction to farm business management and marketing, and agricultural mechanisation. In the second part of the course you start to specialise in the area of mechanisation studying areas such as farm machinery technology, hydraulics and electrics, and mechanisation aspects of soils and farm infrastructure. The mechanisation aspects are studied alongside more general aspects of agriculture such as crop production and science, farm business management and people management. In addition, all students undertake a professional project in their final year in a subject area of interest to them.

The principles of mechanisation are developed in an applied way without the use of complex mathematics.

## Teaching and learning

The course involves a combination of lectures, tutorials and laboratory sessions, together with practical classes on the [University farm](#) designed to demonstrate principles in practice and the application of scientific, technological and business principles to commercial agricultural and food production. In addition, the University has extensive links with other agricultural and food related businesses, and external visits and outside speakers are integrated into the programme. Throughout the course students are expected to apply the skills acquired to solve real-life problems, such that on completion they are able to demonstrate both academic ability and commercial application, which is a combination highly valued by employers. The proportion of independent study increases as the course progresses, particularly in the final year where students have the opportunity to undertake a dissertation in a subject area of their choice.

\* During the Covid-19 Pandemic the University is delivering blended learning. Government guidance is being constantly reviewed to establish the learning events which can be delivered face to face. Please refer to our [frequently asked questions](#) for further details.

## Assessment methods

Assessment is via a balance of course work and examination. Weighting varies depending on course and year of study, but weighting is typically around 65 per cent on course work and 35 per cent on examination; this allows individuals to play to their strengths if they are better at course work than examinations or vice versa. Types of assignment include appraising production systems on the [University farm](#), whole farm case studies, laboratory based analyses and literature based reviews. Format of assignments varies and includes written reports, essays, technical notes, presentations and oral examinations. Students receive written feedback on all course work to help them improve. In addition, first year students undertake examinations in two subjects at the end of the first term to enable them to gauge how they are progressing and feedback is provided on these exams. Staff are able to provide advice and guidance on revision, and many modules include revision sessions.

## Careers

The skills you will develop will be useful throughout the industry, whether managing large, highly mechanised farms, running a successful contracting business or working in the agricultural machinery sector. Harper Adams graduates have a long history of successfully finding employment within all of these areas of work.

# What will I study?

Year	Study time (The percentage of time spent in different learning activities)			Assessment methods (This is the breakdown of assessment methods)		
	% time in lectures, seminars and similar	% time in independent study	% time on placement	Written exams	Practical exams	Coursework
1	33%	67%	0%	41%	13%	46%
2	0%	0%	100%	0%	0%	100%
3	25%	75%	0%	25%	0%	75%

Year 1		Year 2		Year 3	
Skills for the Agricultural Professional (C4001C17)	15	Placement year		Professional Project (P-PROJC17)	15
Animal Production Systems (A4005C17)	15			Crop Production Science (C5002C17)	15
Crop Production Systems (C4013C17)	15			Integrated Crop Management Systems (C5009C17)	15
Agricultural Science (C4010C17)	15			Farm Business Management (R5020C17)	15
Rural Skills (C3001C17)	15			Managing People (R5019C17)	15
Assessment of the Farm Business (R4010C17)	15			Farm Machinery Technology and Management (E5003C17)	15
Agri-food Marketing (F4005C17)	15			Hydraulic and Electrical Power for Agriculture (E5002C17)	15
Agricultural Mechanisation and Buildings (E4001C17)	15			Soil Use and Farm Infrastructure (E5001C17)	15

## Skills for the Agricultural Professional

**Year of study** 1

**Code** C4001C17

**Credits** 15

**Core/option** Core

**Module contact** [Terry Pickthall](#)

This module helps develop students' confidence and competence in the academic skills and professional practices that will enable success within their Agriculture course. The module has four main strands or themes:

1. **Academic skills** including exploring Reading for Success, writing in different ways and information searching.
2. **Professional futures** preparing for placement and employment.
3. **Learning well** which promotes students' self-monitoring and planned improvements in individual approaches to learning.
4. **Digital citizenship** where students review the online and information technology skills that they need to succeed in study and in their professional practice.

Agriculture students will follow a common study programme, but they will be encouraged to spend more time on areas of development that they recognise as challenging. The module is designed to equip students with skills but also with personal resilience, the ability to take control of their own learning, the ability to study independently and to introduce them to the concept of continuing professional development.

## Animal Production Systems

**Year of study** 1  
**Code** A4005C17  
**Credits** 15  
**Core/option** Core  
**Module contact** [Dr John Donaldson](#)

An understanding of livestock production underpins many careers within the land based sector and forms a significant part of the global food industry. As such, an understanding of livestock systems is required across a range of courses.

The module will provide learners with a knowledge of the main livestock systems and how these systems inter-relate with other sustainable land based activities. The various systems will be considered in terms of input requirements, production and husbandry and analysis and interpretation of physical and financial performance data. The module will also consider aspects of sustainable production both in terms of changes to EU support and in light of global population changes.

You will:

- Develop an understanding of the systems of management for the various meat, milk and egg producing systems in the UK and EU and how these are impacted upon by changing legislation and consumer requirements.
- Identify the factors which influence the quality and safety of produce derived from farm animal production systems.
- Relate the requirements of farm animals to land type, building design, equipment and housing systems employed.

## Crop Production Systems

**Year of study** 1  
**Code** C4013C17  
**Credits** 15  
**Core/option** Core  
**Module contact** [Mr Matthew Rodenhurst](#)

The module will cover the crop production processes characteristic of NW Europe, including wheat, barley, oilseeds, potatoes, sugar beet, grassland and forage. You will focus on 'best practice' crop production methods for a range of food and non-food crops and will be related to the need for resource efficient, economic and environmentally acceptable production linked, where necessary, to the current EU and UK Single Payment Schemes.

The module will provide the necessary basic understanding of crop production practices and the related regulatory framework appropriate for higher level study. The module will provide underpinning crop production knowledge for a range of crop science and agronomy modules.

You will:

- Identify the essential requirements for the establishment, growth, development and market requirements of a range of crops.
- Explain and interpret the underlying concepts and principles of crop production associated with current best practice.
- Relate the short and long term factors influencing crop management to appropriate farm practice.
- Interpret qualitative and quantitative data relevant to crop production practices.
- Assess the wider consequences of crop production activities in the context of sustainable production systems.

## Agricultural Science

**Year of study** 1  
**Code** C4010C17  
**Credits** 15  
**Core/option** Core  
**Module contact** [Dr Andy Brooks](#)

Agriculture is becoming increasingly scientific and technological in its approach to new developments. This is clearly evident from the increasing size and complexity of machinery, but it is also true of production techniques. An understanding of the science that underpins modern agricultural developments is becoming increasingly important for students at all levels of study. This module will encourage students to develop an understanding of the basic scientific principles that support both crop and animal production systems and will consider biotic, abiotic and management factors.

The knowledge gained in this module will form a foundation for later Farm Animal Science and Crop Production Science modules.

## Rural Skills

**Year of study** 1  
**Code** C3001C17  
**Credits** 15  
**Core/option** Core  
**Module contact** [Mrs Kath Leigh](#)

This module aims to prepare students for the rural work place through developing a portfolio of nationally recognised vocational qualifications and relevant practical experience. It is envisaged that such skills will enable students to undertake a wider range of tasks during their placement year and throughout future employment. In addition, the module is aimed at increasing awareness of issues surrounding the Health and Safety of oneself and others. Consequently, all students enrolled on the module will undertake a Certificate in Health and Safety, as well as First Aid training.

- Identify potential health and safety concerns in the workplace and propose appropriate action
- Apply first aid procedures in a practical situation
- Demonstrate competence in two practical skills areas
- Develop practical and transferable skills through work experience/training/activity in a relevant sector, in addition to the above skills.
- Identify one's own practical skills development needs and produce evidence of how these have been met through a portfolio.

## Assessment of the Farm Business

**Year of study** 1  
**Code** R4010C17  
**Credits** 15  
**Core/option** Core  
**Module contact** [Nigel Hill](#)

This module is designed to introduce students to the basic knowledge needed to determine areas of strength and weakness within a farming business. Students will be introduced to basic business concepts associated with the recording and reporting of business and enterprise performance. They will then be introduced to techniques for analysis and evaluation of the data, to include different types and sources of external comparative data.

You will:

- Determine the role and scope of management in the farm business.
- Prepare and interpret a set of farm management accounts.
- Assess the physical and financial performance of individual enterprises against published data.
- Identify the role and function of administrative methods and systems that are used to produce management data.

## Agri-food Marketing

**Year of study** 1  
**Code** F4005C17  
**Credits** 15  
**Core/option** Core  
**Module contact** [Patricia Parrott](#)

This module will provide students with knowledge of the marketing systems and market opportunities of major agricultural commodities open to primary producers. It will consider and evaluate the global and dynamic market forces affecting the interdependent players of the agri-food supply chain from primary producer to the end consumer and the extent to which this influences the primary producer's approach to agri-food production and marketing. It will cover the concept of 'farm to fork' and where alternative opportunities exist for primary producers and agricultural businesses. The role of market planning and management of risk along with methods by which this may be achieved will be reviewed in order to result in higher levels of efficiency, effectiveness and market returns.

You will:

- Identify and explain the factors influencing changes in production, channels of distribution and consumption within the UK for major farm commodities.
- Appraise the global business and market environmental factors that influence the UK agri-food supply chain.
- Identify the role of market planning in UK farm businesses and methods to maximise producer returns and manage risk.
- Discuss the alternative marketing systems and options open to primary producers for best use of resources and sustainability.

## Agricultural Mechanisation and Buildings

**Year of study** 1  
**Code** E4001C17  
**Credits** 15  
**Core/option** Core  
**Module contact** [Dr Simon Woods](#)

Modern farming systems rely heavily on mechanisation and farm infrastructure. Those involved in the farming industry need to be familiar with the basic operating principles and management of these assets and require an understanding of how machinery is combined to perform different tasks. This module is designed to enable the student to understand the operating principles of the more common agricultural machines and equipment and to comprehend the management of mechanisation systems in to which they are integrated.

To successfully complete this module, students will have to demonstrate understanding of a broad range of scientific, economic and business concepts and principles relevant to farm mechanisation.

## Placement year

**Year of study** 2  
**Core/option** Core

Read our dedicated [Placement Learning](#) pages for information on the many benefits of the placement year.

## Professional Project

**Year of study** 3  
**Code** P-PROJC17  
**Credits** 15  
**Core/option** Core  
**Module contact** [Professor Lydia Arnold](#)

This module provides students with the opportunity to carry out an investigation that is of relevance or interest to a company or organisation. In many cases it is expected that students will have identified a problem or challenge arising from their placement or other work-based learning experiences. The topic is to be negotiated between the student and the Supervisor or Professional Project Manager and will be required to meet the broad learning outcomes outlined below. An academic supervisor will support the student with their project on an individual basis, in conjunction with any technical input required from the sponsoring organisation, where applicable. The student is expected to produce and submit a report of 5,000 words in length written in an appropriate format.

You will:

- Identify a specific professional research problem or question for investigation.
- Plan and undertake a programme of work to investigate the current understanding in this area using a literature review, and, where appropriate, primary research.
- Discuss the findings, identify a range of solutions to the problem or research question, evaluate alternative solutions and make clear practical recommendations that can be applied within a particular employment context or professional sector.
- Create a report in an appropriate format, as agreed with the supervisor and, where appropriate, the sponsoring organisation.
- Deliver an effective oral presentation and respond to questions to further explain the project and justify the recommendations.

## **Crop Production Science**

**Year of study** 3  
**Code** C5002C17  
**Credits** 15  
**Core/option** Core  
**Module contact** [Dr Andrew Watson](#)

The successful production of crops requires good nutrient management and successful crop protection. This module will enhance students' understanding of the science of fertilisers and pesticides, and build on this to enable them to develop appropriate nutrient management and crop protection strategies. It is also important that these strategies take into account potential environmental and human health impacts and follow good agricultural practice.

## **Integrated Crop Management Systems**

**Year of study** 3  
**Code** C5009C17  
**Credits** 15  
**Core/option** Core  
**Module contact** [Mr Matthew Rodenhurst](#)

Integrated Farm Management works to balance the needs of consumers, society, the environment and the farmer, encouraging sustainable farming systems through the adoption of Integrated Farm Management (IFM).

IFM is a whole farm approach that combines the best of traditional methods with beneficial modern technologies, to achieve high productivity with a low environmental impact. Farming has always been innovative and enterprising, responding to consumer demands and government priorities but the challenges now are very different. Food security, climate change, a growing, aging and urbanised population all put pressures on natural resources and create disconnections between food, farming and nature.

This module will study some of the environmental issues arising from modern production techniques, and the role of farm waste management planning.

## **Farm Business Management**

**Year of study** 3  
**Code** R5020C17  
**Credits** 15  
**Core/option** Core  
**Module contact** [Wyn Morgan](#)

This module is designed to build on the outcomes of the level 4 module - Assessment of the farm business. Following a review of the current farm business the next step is to predict forward the likely financial outcomes of any decisions that have been or may be made, this module covers the required techniques to do this.

The skills developed will provide students with the ability to apply technical and financial aspects of farm business management in the planning and operation of that farm, taking account of economic, market and political external drivers and considerations. This is integral to the management of the farm business.

Students will be required to identify issues and opportunities and provide appropriate solutions in the context of reviewing and planning a farm business. Students will be challenged to incorporate outcomes from other technical and production based modules into planning exercises undertaken within this module.

## **Managing People**

**Year of study** 3  
**Code** R5019C17  
**Credits** 15  
**Core/option** Core  
**Module contact** [Nigel Hill](#)

The structure of UK agriculture over recent years has resulted in an increase in size of farms and a reduction in the number of employed staff. However, the cost to farm businesses of poor people management skills is substantial, so it is essential that students have an understanding of the effective management of people.

This module is designed to develop an understanding of human motivation and management style, the responsibilities of employer and employee and an appreciation of how to manage effective interpersonal relationships at work, particularly drawing on experiences from placement. Group work and digital activities particularly will develop the graduate skills required for the rapidly changing workplace environment.

## **Farm Machinery Technology and Management**

**Year of study** 3  
**Code** E5003C17  
**Credits** 15  
**Core/option** Core  
**Module contact** [Dr Simon Woods](#)

Modern farming is highly mechanised. Those involved in the industry need to understand the general mechanical principles by which a wide range of machinery works and appreciate how machine management and machine adjustments affect performance. This module builds from the basic introduction to farm machinery given in the module *Agricultural Mechanisation and Buildings*. It is more technical and provides intensive instruction in the principles of operating, setting up and managing common pieces of farm equipment and mechanised systems. To successfully complete this module, students will have to demonstrate understanding of a broad range of scientific, economic and business concepts and principles relevant to farm mechanisation. They will do this by selecting and applying the appropriate concepts and principles to an individual machinery selection assignment.

## Hydraulic and Electrical Power for Agriculture

**Year of study** 3  
**Code** E5002C17  
**Credits** 15  
**Core/option** Core  
**Module contact** [Mr Graham Higginson](#)

Virtually all agricultural machines and off-road vehicles transmit and control power using a combination of electrical, hydraulic and mechanical systems. Those planning careers involving agricultural or off-road machinery need to appreciate the fundamental principles of electrical and hydraulic systems and how they are used to control and transmit power. They should also be able to design simple systems incorporating these elements.

This module, designed for Agriculture with Mechanisation students, provides knowledge that underpins the subsequent Measurement and Control module.

## Soil Use and Farm Infrastructure

**Year of study** 3  
**Code** E5001C17  
**Credits** 15  
**Core/option** Core  
**Module contact** [Mr Simon Cooper](#)

This specialist module builds on principles introduced in the modules Animal and Crop Production Systems, and Agricultural Mechanisation. The success, or failure, of a modern farm enterprise rests, in part, with the appropriate use of available resources such as the soil and buildings. Stock and crops when harvested are housed or stored in buildings that are intrinsically linked to the land through their foundations and drainage systems. By products of farming enterprises are then returned to the soil, as a valuable soil conditioner and fertiliser.

This module aims to show how the physical properties of soil influence its mechanical and structural behaviour and how soil water content is controlled through drainage and irrigation. At the same time, the design and construction of modern farm buildings used for livestock production and crop storage will also be considered. Particular attention will be given to meeting the requirements of welfare legislation in livestock building design and environmental considerations to reduce aerial, surface and ground water pollution.