



**Cranfield**  
Environment  
and Agrifood



Postgraduate  
master's courses in

# Agrifood

**Academic year 2022/23 entry**

Applied Bioinformatics MSc  
Food Systems and Management MSc  
Future Food Sustainability MSc

# Cranfield University

We are the UK's only specialist postgraduate university in technology and management, with longstanding relationships with some of the most prestigious global companies. Our close collaboration with industry, and passion for the areas we operate in, will help your career.

**Specialist postgraduate**

A research-focused professional community

**81%**

of our research is world-leading or internationally excellent

Research Excellence Framework (REF) 2014



**Six-time winner of the Queen's Anniversary Prize for Higher and Further Education**

**Over £150 million** of investment in new facilities over the past five years

A professional network of **70,000+** alumni, from 177 countries

**5,000+** postgraduate students from **100+** countries

**UK No.1** Teaching staff to student ratio 1:8  
Higher Education Statistics Agency (HESA) 2018-19

As we are postgraduate only, we are not listed in league tables that help compare undergraduate universities, such as *The Times World Rankings* and *The Complete University Guide*.

"I chose Cranfield because I thought it has very good connections to the industry and also how they teach the course is very up-to-date. They have all the new facilities and very good methods of teaching."

Inga Ósk Jónsdóttir, current student,  
(Food Systems and Management MSc 2019)



# Reasons to study **agrifood** with us

## 1 Projects with industry

During group and individual projects students have regular contact and are supported by external organisations including Unilever, PepsiCo, McDonald's, Waitrose and NGOs giving you direct access and insight into real companies and real working challenges, helping to solve major global challenges in the agri-tech industry.

## 2 Learning from the best

Our agrifood courses are taught by leading academics alongside industry practitioners, ensuring that you have access to the most up-to-date techniques and innovations. Two of our three MScs are delivered in collaboration with our internationally-recognised Cranfield School of Management.



## 3 Networking opportunities

As a specialist postgraduate university, we have excellent links with the agrifood and bioinformatics industry giving you the opportunity to collaborate with both large and medium-sized companies and network to progress your career.

## 4 Industry-relevant courses

The courses have an advisory panel from industry to help evolve course modules and ensure relevance to industry needs.

## 5 Outstanding facilities

Our exceptional on-site facilities include our soil management facility, a purpose-built, state-of-the-art resource for the advancement of soil dynamics, soil management and soil conservation techniques. We also have fully-equipped laboratories for molecular biology, analytical biochemistry and microbiology, and a new unique phenotyping platform for investigating plant, soil and water interactions. Our new Agri-informatics facility provides the UK with a centre of excellence in data science related to precision agriculture. In addition to this our bioinformatics lab is equipped with high-performance computing facilities.

## 6 Employment prospects

Studying at Cranfield helps to unlock your potential, develops your talent and greatly enhances your employability. Employers across the sector recognise that Cranfield graduates leave with the skills and expertise ready to meet today's challenges. Many of our graduates have gone on to develop a successful career in leading global companies, often receiving a relevant job offer before finishing the course and allowing them to make a real impact in the sector. See page 7 for examples.



New Agri-informatics facility

# Agrifood courses

**Food quality, safety and security are major worldwide challenges and draw increasing attention from both policy makers and businesses. Cranfield's agrifood MSc courses explore the integrated nature of our food supply chains and the ongoing need to increase their economic and environmental sustainability.**

As a specialist postgraduate university, Cranfield's courses are tailored to improve your understanding at master's level of all aspects of food systems and agricultural processes. We draw on the latest technologies and informatics tools and accelerate your personal development through improvements in your learning, communication and analytical skills.

Our academics' world-leading research in this sector, combined with our collaboration with leading industry specialists will provide you with a learning experience that will prepare you for your future career.

## Agrifood courses

### Informatics course:

Gain the computational skills and awareness needed to develop new bioinformatics tools to analyse and interpret the vast amounts of biological data now becoming available.

- Applied Bioinformatics.

### Food management courses:

Gain a critical appreciation of the issues concerned with the sustainable production and supply of food in the context of climate change and other challenges.

- Food Systems and Management,
- Future Food Sustainability.

"The Cranfield University students that I have met in the past few years have been at the top of the top from my own experience. They are knowledgeable, they are easy to speak with and they are hungry for knowledge. They are looking to see how they can further develop themselves and develop the industry. And it is a delight to teach them as we have done throughout the years."

**Professor Bizhan Pourkomaillian**, Director Global Food Safety, Restaurant and Distribution, McDonald's



Modules form 40% of the course content, with the group and individual projects making up the other 60%.

This brochure shows the compulsory modules offered in the 2021-2022 academic year, to give you an idea of course content. To keep our courses relevant and up-to-date, modules are subject to change so please check the latest information on our website.

All of these courses are offered on a full or part-time basis.

## Informatics course

### Applied Bioinformatics

MSc

[www.cranfield.ac.uk/bix](http://www.cranfield.ac.uk/bix)

Recognised by the Biotechnology and Biological Sciences Research Council (BBSRC), this course develops advanced theoretical knowledge and computational skills. You will apply these to help solve real-life biological problems.

#### Compulsory modules

- Advanced Sequencing Informatics and Genome Assembly,
- Application of Bioinformatics in Epigenetics, Proteomics and Metagenomics,
- Data Integration and Interaction Networks,
- Exploratory Data Analysis and Essential Statistics Using R,
- Introduction to Bioinformatics Using Python,
- Machine Learning for Metabolomics,
- Next Generation Sequencing Informatics,
- Programming Using Java.

## Food management courses

### Food Systems and Management

MSc, PgDip, PgCert

[www.cranfield.ac.uk/fsm](http://www.cranfield.ac.uk/fsm) • Accredited - see page 9

A unique offering within the UK and Europe, this course examines the whole of the food chain from pre-harvest to consumer through the integration of science, technology and management.

#### Compulsory modules

- Agrifood Business Innovation,
- Food Chain Resilience\*,
- Food Diagnostics,
- Food Safety and Quality Management and Certification,
- Leading Corporate Sustainability\*,
- Postharvest Technology,
- Quality of Food and Beverages.

### Future Food Sustainability

MSc, PgDip, PgCert

[www.cranfield.ac.uk/ffs](http://www.cranfield.ac.uk/ffs) • Accredited - see page 9

Gain a detailed critical awareness of the risks, challenges and opportunities to provide a sustainable global food supply.

#### Compulsory modules

- Agricultural Informatics,
- Evaluating Environmental Sustainability,
- Food Chain Resilience\*,
- Principles of Sustainability,
- Soil Systems,
- Strategic Foresight,
- Technologies for Seeds and Crop Protection,
- Water and Sustainable Agrifood Systems.

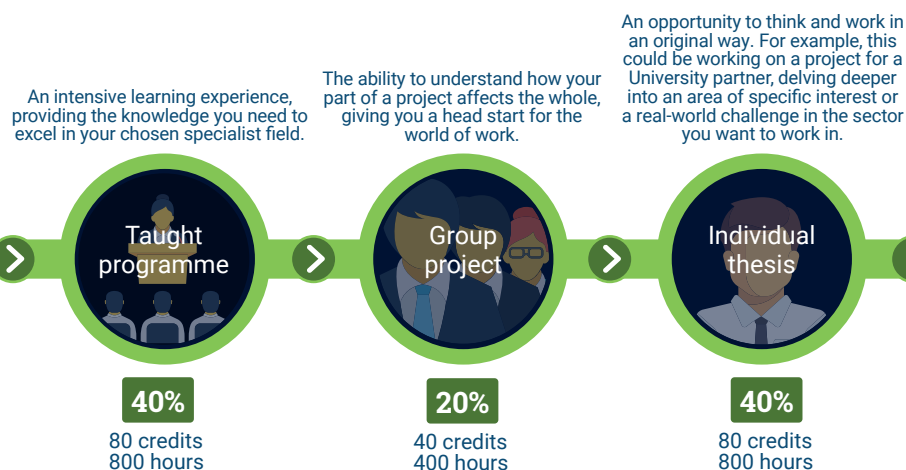


\* Modules Delivered in collaboration with Cranfield School of Management.

# Course structure

You will take eight compulsory modules (seven for Food Systems and Management). Each module is two weeks in duration, consisting of one week of lectures, practical work, site visits and one week for private study. You will also complete a group project and an individual research project.

This diagram illustrates the course structure of our full-time master's courses. Please check your specific course structure online for more detailed information, including the weight of each phase and part-time course structure variations.



Registration -----> 200 credits, 2,000 hours -----> Completion

## Industry-sponsored projects

The group and individual projects that you will take as part of your course are often run in collaboration with our industrial partners.

Some recent projects include:

- Evaluation of the potential health hazards of deep frying – **McDonald's**.
- Use of edible coatings as an alternative to conventional plastic packaging – **The Graphene Corporation (TGC)**.
- Development of a distributed version control-enabled visualisation suite for genome assemblies.

# Industry links

Cranfield has unrivalled links with industry. Our students benefit from our extensive contacts and track record of close collaboration with government and the agrifood sector.

## Industrial advisory panel

Our courses are reviewed each year by a panel of industry advisors from leading companies and institutions in the sector. This ensures that the skills you acquire are up-to-date and are what employers want. Some of the companies represented on our agrifood courses industrial advisory panel include:



# Careers

A degree from Cranfield will fast-track your career, enabling you to go further and to progress more quickly. You will also join a global alumni network providing many opportunities as you progress in your career.

Typically, our graduates go on to work in the following types of roles and organisations:

### Roles:

- Bioinformatician,
- Brand Manager Assistant,
- Computational Biologist,
- Data Scientist,
- Metagenomic Bioinformatician/ Software Engineer,
- Process/Produce Technologist,
- Resilience Officers,
- Software Developer (Genomics),
- Supply Chain/Logistics Analyst,
- Sustainability Manager,
- Technical Development Manager.

### Organisations:

- AMC Fresh & Natural Foods (UK) Limited,
- Deloitte,
- GlaxoSmithKline,
- G's Growers,
- Kerry Foods,
- Oxford Gene Technology
- PepsiCo,
- Rothamsted Research,
- Sanofi Aventis,
- Unilever,
- Warburtons.

Our Careers Service team will work with you to identify suitable opportunities and support you throughout the job application process. [www.cranfield.ac.uk/agrifoodmsc](http://www.cranfield.ac.uk/agrifoodmsc)

# Academic staff

You will be taught by a wide range of subject specialists from Cranfield University and industry, who draw on their research and industrial expertise to provide stimulating and relevant input to your learning experience.



**Dr Sofia Kourmpetli**, Lecturer in Plant Sciences, Future Food Sustainability, Agrifood MSc Programme Director

Sofia is an expert in molecular genetics for crop improvement. Her current research focuses on understanding and improving seed quality, reducing food losses and waste and exploring the transformative potential of urban agriculture.

[www.cranfield.ac.uk/Skourmpetli](http://www.cranfield.ac.uk/Skourmpetli)



**Dr MariCarmen Alamar**, Lecturer in Postharvest Biology, Food Systems and Management MSc Course Director

Carmen is an expert in postharvest biology and technology of fresh produce. Her goal is to provide a holistic approach to postharvest bioscience where agri-engineering and biology are better integrated in order to tackle postharvest challenges throughout the supply chain.

[www.cranfield.ac.uk/mdalamargavidia](http://www.cranfield.ac.uk/mdalamargavidia)



**Dr Natalia Falagán**, Lecturer in Food Science and Technology, Future Food Sustainability MSc Course Director

Natalia is a global expert in food systems. Her research focuses on reducing food loss and waste by developing innovative technologies and packaging solutions to extend the shelf-life of fresh produce while maintaining nutritional quality.

[www.cranfield.ac.uk/nfalagansama](http://www.cranfield.ac.uk/nfalagansama)



**Dr Fady Mohareb**, Reader in Bioinformatics, Applied Bioinformatics MSc Course Director

Fady has more than 15 years of experience in the bioinformatics field. His research focuses on genome and transcriptome informatics, machine learning, data science, data visualisation and cloud technologies. Fady is leading the genomic and transcriptomic informatics work at Cranfield University on a number of national and international consortia.

[www.cranfield.ac.uk/fmohareb](http://www.cranfield.ac.uk/fmohareb)



**Dr Angel Medina Vaya**, Reader in Food Mycology, Acting Director of Environment and Agrifood

Angel has focused his research interests on the impact that environmental stress has on the functioning of fungi (mainly mycotoxigenic species), the mechanisms used for ecophysiological tolerance, and the molecular basis of secondary metabolite production, especially mycotoxins.

[www.cranfield.ac.uk/amedinavaya](http://www.cranfield.ac.uk/amedinavaya)

# Key facts and statistics

## Course information



**Full-time**  
One year



**Part-time**  
Up to three years

See the course page for more information about part-time study.



**Start date**  
October



**MSc/PgDip/PgCert**

Not all courses offer all awards, see course information pages for details of awards offered.



**Fees**

Please see the individual course pages on our website for full fee information and full-time or part-time options. Terms and conditions apply.

See [www.cranfield.ac.uk/fee-information](http://www.cranfield.ac.uk/fee-information)

## Cohort profile\*



**Geographic spread**  
27% UK  
26% EU  
47% Rest of world



**Typical cohort age**  
19-29 years



**Average cohort size**  
15



**54% Female**  
**46% Male**

\*These figures give an indication of the course make-up at registration across our agrifood courses for the entry 2020-2021.

## Accreditations



Food Systems and Management MSc  
Future Food Sustainability MSc  
are accredited by the Institution of  
Agricultural Engineers (IAgrE).



Food Systems and Management MSc  
is accredited by The Institute of Food  
Science and Technology (IFST).

# Financing your studies

If you need advice on funding your course, we can provide information and a range of online tools to help you put together the funding package you need for your course and living costs.

There is more information on our website:  
[www.cranfield.ac.uk/funding](http://www.cranfield.ac.uk/funding)

# How to apply

Read more about our entry requirements and how to apply.

[www.cranfield.ac.uk/apply](http://www.cranfield.ac.uk/apply)



# Life at Cranfield

A welcoming, professional campus community.

Located just over an hour from London in the English countryside, Cranfield's campus environment supports close, working relationships between our multinational postgraduate students and academic and industry experts.

[www.cranfield.ac.uk/visit](http://www.cranfield.ac.uk/visit)



Take a virtual tour to see inside some of our facilities:

[virtualtour.cranfield.ac.uk](http://virtualtour.cranfield.ac.uk)



Cranfield University works with over

**1,500** businesses and governments  
based in over 40 countries

These organisations include:



For a full list of Cranfield courses, please see our prospectus and website.

[www.cranfield.ac.uk/agrifoodmsc](http://www.cranfield.ac.uk/agrifoodmsc)

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[blogs.cranfield.ac.uk](https://blogs.cranfield.ac.uk)

Every effort is made to ensure that the information in this brochure is correct at the time it is printed. Please check our website for the latest information. Photographs in this publication were taken prior to and during the coronavirus pandemic. We continue to monitor the pandemic and take all the necessary steps to ensure the health, safety and wellbeing of our Cranfield community.

See [www.cranfield.ac.uk/coronavirus](http://www.cranfield.ac.uk/coronavirus) SWEE-A-September 2021.