

Academic year  
2025/26 entry



Postgraduate master's courses in

# Data science

within Agrifood, Energy and Sustainability, Environment, and Water

Advanced GIS and Remote Sensing MSc

Applied Bioinformatics MSc

Data Science and Artificial Intelligence for Sustainability MSc

# Cranfield University

## Our reputation

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.



We work with over

**1,500**

businesses and governments based in over 40 countries.



**Over £150m**

of investment in new facilities over the past five years.



**5,000+**

postgraduate students from 100+ countries.



A network of

**80,000+**

alumni, from 173+ countries.

As we are postgraduate only, we are not listed in many league tables that help compare undergraduate universities.

## Data science at Cranfield

With a global reputation, Cranfield University is at the forefront of research and education.



**winner** Queen's Anniversary Prize

Cranfield is a six-time winner of the prestigious **Queen's Anniversary Prize**, the only national honour given to educational institutions for work carried out in the public interest.



**Top 30** in the world

for **Engineering – Mechanical, Aeronautical and Manufacturing**

QS World University Rankings by subject, 2024

# Reasons to study with us

1

## Research excellence and industry-led

88% of our research is classed as world-leading or internationally excellent (REF, 2021). Our teaching is informed by our research to place you at the forefront of new technologies and innovations and provide you with the opportunity to make an immediate impact. Our master's degrees benefit from the input of an Industrial Advisory Panel to ensure the course content is relevant to the needs of global employers and is industry focused.

2

## Learning from the best

We attract leading academics and industry practitioners from around the globe. The diverse mix of backgrounds, cultures, knowledge, and experiences creates an enriched learning environment to tackle global challenges.

3

## Outstanding facilities

Our extensive and impressive on-site pilot-scale facilities enable our students to conduct exciting, transformative, and leading science. Our students will gain access to Cranfield's high performance computing facilities, which boast an impressive 5,888 cores, 47TB of distributed memory, and 2PB storage. Our infrastructure stands ready to tackle the most demanding computational challenges in data science and artificial intelligence.

4

## Projects with impact

As a specialist postgraduate university, we have unrivalled links to industry giving you the opportunity to collaborate with both large and medium-sized companies. Industry-sponsored group and individual projects enable you to tackle the real-world issues and address global challenges.

5

## Flexible learning

All our data science courses run on a full- and part-time basis. For part-time students, the modular structure allows flexibility, making an MSc achievable even if you work full-time.

66

"The curriculum struck a perfect balance between theoretical knowledge and hands-on practical experience, providing me with a comprehensive understanding of different domains of bioinformatics. This approach not only enriched my academic journey but also equipped me with skills that are invaluable for my future career prospects."

**Samaksh Singh**, Research Associate, National University of Singapore, (Applied Bioinformatics MSc 2023)



# Courses

**The digital landscape of sustainability is changing fast - we are providing the next generation of leading scientists, engineers and managers with the multidisciplinary digital skills, expertise and confidence to help achieve resilient and practical solutions to global challenges the digital sector is facing today.**

As a specialist postgraduate university, Cranfield's high performance computing infrastructure encompasses a wide range of computational tools, hardware, software, and expertise to address complex problems that are beyond the capabilities of traditional computing resources. We draw on the latest technologies and innovations and accelerate your personal development through improvements in your learning, communication and analytical skills.

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

**Compulsory modules are listed in the order they are delivered. Elective modules are listed alphabetically.**

## Advanced GIS and Remote Sensing

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

Full-time, Part-time

MSc, PgDip, PgCert

Developed in response to the increased global demand for multidisciplinary managers, advisors and consultants in resource management, this course integrates the full range of geospatial technologies with the latest advances in artificial intelligence. It gives you the expertise you need to develop a career in the global geospatial sector across a wide range of application areas.

### Modules

- GIS and Spatial Data Management,
- Scientific Python,
- Aerial Photography and Digital Photogrammetry,
- Applied Earth Observation,
- Image Processing and Analysis,
- Advanced GIS Methods,
- Environmental Resource Survey,
- Web Mapping.



Accredited by:



High performance computing cluster in one of Cranfield's data centres

# Applied Bioinformatics

<a href="http://www.cranfield.ac.uk/bix">www.cranfield.ac.uk/bix</a>	Full-time, Part-time	MSc
--	----------------------	-----

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.

### Modules

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

## Bioinformatics Master's-level apprenticeships

You can also study our Bioinformatics master's-level apprenticeship, delivered against the Bioinformatics Scientist L7 Standard. Apprenticeships provide a unique opportunity to blend academic studies with real-time work-based activity, supporting both individual and business development. Funding for eligible applicants employed and based in England can be allocated from the employer Apprentice Levy account.

Read more on our website: [www.cranfield.ac.uk/bixapprenticeship](http://www.cranfield.ac.uk/bixapprenticeship)

# Data Science and Artificial Intelligence for Sustainability

<a href="http://www.cranfield.ac.uk/DataScienceandAI">www.cranfield.ac.uk/DataScienceandAI</a>	Full-time, Part-time	MSc, PgDip, PgCert
--	----------------------	--------------------

Digital technology is set to change the face of energy. This course provides the skills, techniques and know-how to be part of this exciting and fast-growing sector.

### Modules

- GIS and Spatial Data Management,
- Decision Science,
- Scientific Python,
- Data Analytics for Sustainability,
- Artificial Intelligence for Energy Systems,
- Sustainability and Environmental Assessment.

### Elective modules

- One from the following two modules,
- Computational Fluid Dynamics for Renewable Energy,
  - Energy Entrepreneurship.

### Elective modules

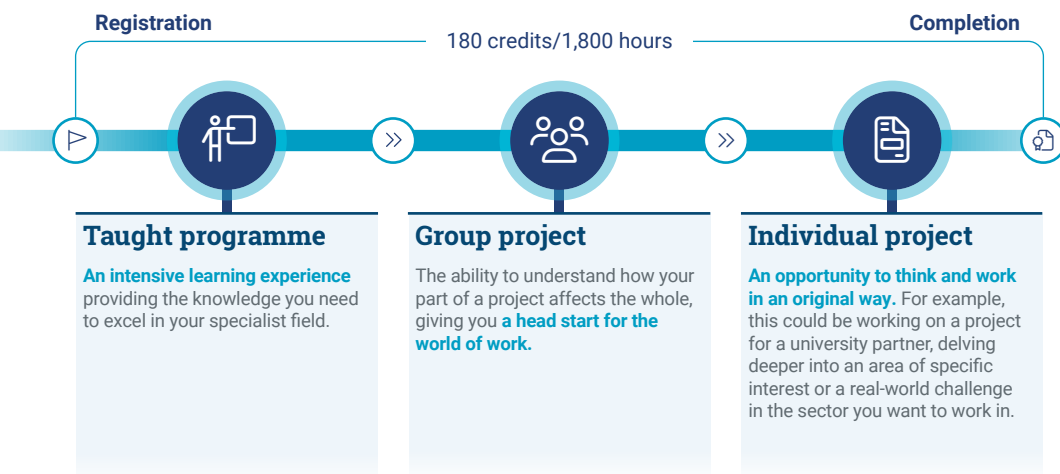
- One from the following two modules,
- Energy Systems Case Studies,
  - Short Research Project.

The compulsory and (where applicable) elective modules offered for the 2024-25 academic year are shown to give you an indication of the current course content. To keep our courses relevant and up-to-date, modules may be subject to change from cohort to cohort; please check our website for the latest information.

# Course structure

Our specialist, sector-focused master's courses are set up and developed in close collaboration with industry partners, ensuring the content of our courses remains industry-relevant and employers are impressed with our graduates' business-readiness.

This diagram illustrates the standard course structure for our master's programmes. Please check your course structure online for more detailed information.



## Group projects

Some recent projects include:

- Development of a distributed version control-enabled visualisation suite for genome assemblies.
- Using Geographic Information Systems (GIS) mapping with Unmanned Aerial Vehicle (UAV) and historic flood extents to explore flood emergency response pathways.
- Development of an automated DNA metabarcoding pipeline.



# Industry links

**Cranfield has unrivalled links with industry, and you will benefit from our extensive contacts and track record of close collaboration with decision-makers in your chosen sector.**

These benefits range from the various high-profile guest speakers we are able to attract, to the ability to network with future employers at our group presentation days and careers fairs held on campus.



## 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.



## Careers

Our alumni can be found around the world in leading roles. Here are a few examples of the roles our alumni have secured in recent years.

Read more on our website [www.cranfield.ac.uk/careers](http://www.cranfield.ac.uk/careers)

### Roles:

- Bioinformatics Scientist,
- Data Scientist,
- Energy Analyst,
- Project Development Officer,
- GIS Technician,
- Offshore Energy Analyst,
- Remote Sensing Scientist,
- Research Analyst.

### Companies:

- AstraZeneca,
- Airbus,
- Cambridgeshire ACRE,
- Cancer Research UK,
- Oxford Gene Technology,
- Wellcome Sanger Institute.

# Academic staff

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

The list of academics below represents a small proportion of our staff; we also have a large number of highly-experienced guest lecturers.



**Professor Nazmiye Ozkan,**

Professor in Sustainable Energy Transitions and Head of Centre for Energy Systems and Strategy

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

Nazmiye is an interdisciplinary energy economist with a background in urban and regional planning. She is interested in understanding the interactions between social, economic, environmental and technological systems, from household up to network and city levels, using socio-technical systems thinking.



**Professor Fady Mohareb,**

Professor of Bioinformatics and Head of Bioinformatics Apprenticeship Training Programme

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

Fady's research focuses on genome and transcriptome informatics, machine learning, data science, data visualisation and cloud technologies.



**Dr Da Huo,**

Lecturer in Energy Systems Intelligence and Data Science

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

Da specialises in innovating optimisation and machine learning methods for distribution networks, whole systems, and the wider smart grid applications.



**Dr Daniel Simms,**

Senior Lecturer in Remote Sensing and Advanced GIS and Remote Sensing Course Director

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

Daniel is a specialist in applied remote sensing and GIS, researching the integration of imagery and spatial data for land and agricultural information.



**Dr Tomasz Kurowski,**

Lecturer in Bioinformatics and Applied Bioinformatics MSc Course Director

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

Tomasz's research interests focus on high-performance algorithms and software solutions for biological data management and use, especially in the field of genomics.



**Professor Jacqueline Hannam,**

Professor in Pedology

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

Jack is a soil scientist with expertise in land-use decisions, soil data and modelling, soil health, and soil policy. Jack leads the Soil Informatics group and the LandIS team at Cranfield, who are responsible for the national soil data for England and Wales.



# Key facts and statistics

## Course information



### Full-time

One year.



### Part-time

Two to three years. See the course page for more information about part-time study.



### Start date

October.



### Award

MSc/PgDip/PgCert.

Not all courses offer all awards, see course information on pages 4 and 5 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/fees](http://www.cranfield.ac.uk/fees)

## Cohort profile\*



### Geographic spread

63% UK.

37% International.



### Age range

20–59.



### Average cohort size

14.



### Gender

42% Male.

58% Female.

\*These figures give an indication of the course make-up at registration across our data science courses for the entry 2023-2024.



Oil and gas engineering laboratory

# Useful information



## Financing your studies

Whether you are a UK-based or international student, we provide information, advice and a range of online tools to help you put together the funding package you need. Take a look at our funding finder which provides a searchable database of sources of financial support. We also offer bursaries for high quality applicants. Visit our website where we provide a range of additional sources of potential funding and helpful organisations and contacts for information, advice and guidance.

Learn more at [www.cranfield.ac.uk/funding](http://www.cranfield.ac.uk/funding)

## More than a degree with the **Cranfield Enhance programme**

Cranfield graduates are valued for their distinctive skills and capabilities. We have developed these programmes to complement and enhance what you learn on your chosen qualification. On the Cranfield Enhance programme, you will be able to earn 'digital badges' in areas such as employability and entrepreneurship to showcase your new skills to prospective employers.

Read more at [www.cranfield.ac.uk/enhance](http://www.cranfield.ac.uk/enhance)

“

"There was a really good blend of formal lectures, and seminar teaching, but also interspersed with lab sessions, allowing us to apply the theory into practice to see how that actually works. So that was a really good mix for me, going beyond just pure theory to actually beginning to apply that."

**Martin Williams**, Principal Technical Consultant, Ricardo,  
(Advanced Digital Energy Systems MSc 2023 - now known as  
Data Science and Artificial Intelligence for Sustainability)



# Life at Cranfield

A welcoming, professional campus community.



## Explore our University

You can personalise your virtual visit to our campus by choosing the subject area you are interested in on our interactive tool:

**[virtualexperience.cranfield.ac.uk](https://virtualexperience.cranfield.ac.uk)**



## How to apply

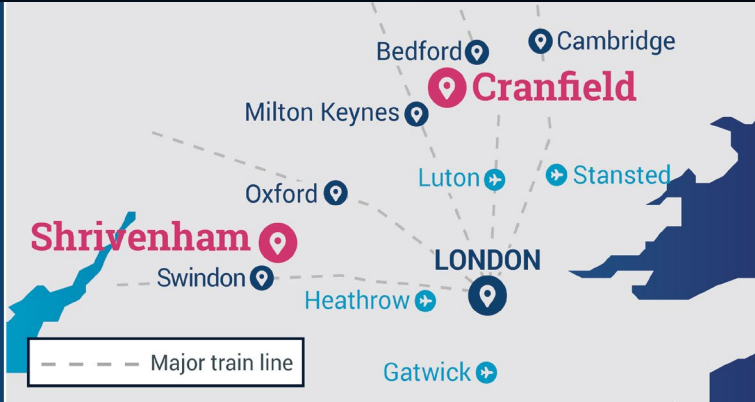
Read more about our entry requirements and how to apply at **[www.cranfield.ac.uk/apply](https://www.cranfield.ac.uk/apply)**

# Our location



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)



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

## Our sector study areas:

Aerospace,  
Defence and Security,  
Energy and Sustainability,  
Environment and Agrifood,

School of Management,  
Manufacturing and Materials,  
Transport Systems,  
Water.



@cranfielduni



@cranfielduni



/cranfielduni



Cranfield University



/cranfielduni



[blogs.cranfield.ac.uk](mailto:blogs.cranfield.ac.uk)

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

Cranfield University,  
Cranfield, MK43 0AL, UK

T: +44 (0)1234 758082  
E: [study@cranfield.ac.uk](mailto:study@cranfield.ac.uk)  
[www.cranfield.ac.uk](http://www.cranfield.ac.uk)