



Postgraduate  
master's courses in

# Energy and Power

**Academic year 2021/22 entry**

Advanced Chemical Engineering MSc  
Advanced Digital Energy Systems MSc  
Advanced Mechanical Engineering MSc  
Advanced Process Engineering MSc  
Energy Systems and Thermal Processes MSc  
Offshore Engineering MSc  
Renewable Energy MSc

# Cranfield University

We are the UK's only specialist postgraduate university in technology and management, with long-standing 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**

THE QUEEN'S ANNIVERSARY PRIZES FOR HIGHER AND FURTHER EDUCATION 2019

**Over £100 million** of investment in new facilities over the past four years

A professional network of **67,000+** alumni, from 169 countries

**UK no.2** graduate employment

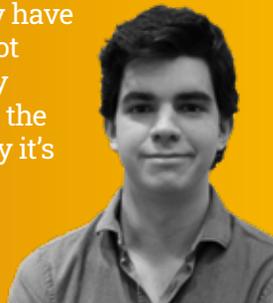
DLHE longitudinal, 2017

**UK Top 5 for Engineering** (Mechanical, Aeronautical and Manufacturing)  
QS World University Rankings by subject, 2020

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 for its heritage, the technology they have developed over the years is impressive and I have a lot of friends that have studied here so they gave a pretty good recommendation. Cranfield is also very good in the rankings. In my field specifically in renewable energy it's very well positioned."

**Xavier Lebrija**, Edison Engineer, GE Renewable Energy (Renewable Energy MSc 2019)



## Reasons to study **Energy and Power** with us

### 1 **Projects with industry**

We work closely with industry to tackle the real-world issues in both developed and developing nations, and address global climate challenges around carbon reduction, renewable energy and the transition to sustainable energy and net-zero. Your individual and group project will give you an opportunity to work with our industry connections and make a difference to the energy landscape of tomorrow.

you the opportunity to build useful, and career-enhancing connections with industry. You will have instant access to our international alumni network and build long-term relationships with the Cranfield academic team to last throughout your career.

### 2 **Learning from the best academics**

We attract leaders in their area of expertise from around the globe. The diverse mix of backgrounds, cultures, knowledge and experiences creates a rich teaching and research environment to tackle the grand challenges facing the world, and deal with climate change head-on.

### 5 **Research-informed teaching**

Our teaching is informed by our expertise in all forms of energy and power across technology and business. This includes renewable energy, thermal and carbon capture and storage, energy from waste, energy materials and power plants, energy policy and strategy, the exciting and rapidly growing area of digital energy systems and so much more. The team at Cranfield incorporate their latest ground breaking knowledge into each year's MSc courses to ensure that the course content gives you the opportunity to make an immediate impact.

### 3 **Outstanding facilities**

Our extensive and impressive on-site pilot-scale facilities allow us to conduct exciting, transformative and leading science. These facilities include: gas turbines, high-pressure combustion rigs, a flow assurance laboratory, a high-temperature coating test facility, solar simulators, wind tunnels, large scale mechanical test rigs and a 30m wave tank, amongst others.

### 6 **Industry-relevant courses**

We design our courses with employers and careers in mind. We combine high-calibre teaching with practical, real-world work experience, giving you an unparalleled competitive edge and the ability to start on your journey the moment you leave Cranfield.

### 4 **Networking opportunities**

We have a considerable global network of industrial and government contacts, some of whom will provide regular or guest lectures, which gives

### 7 **Flexible learning**

All energy and power 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.

# Courses

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

The list of modules for each course is available on our website.

## Advanced Chemical Engineering

MSc/PgDip/PgCert

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

This chemical engineering MSc is unique in offering two study routes: i) general chemical engineering, ii) biorefining. Whichever route you choose, it will equip you with the skills to address the global chemical engineering challenges of the 21st century.

## Advanced Digital Energy Systems

MSc/PgDip/PgCert

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

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.

## Advanced Mechanical Engineering

MSc/PgDip/PgCert

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

Mechanical engineers remain in huge demand across the energy industry. This course provides real-world, industrially focused teaching to enhance career prospects.



Carbon capture and storage laboratory.



Process systems engineering laboratory.

## Advanced Process Engineering

MSc/PgDip/PgCert

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

Learn how to design, optimise and operate industrial processes, as well as lead engineering projects and begin your transformation into an engineering leader solving global challenges.

## Energy Systems and Thermal Processes

MSc/PgDip/PgCert

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

Develop state-of-the-art technical knowledge and the skills required to help achieve energy efficiency and reduce environmental pollution with this well-established MSc.

## Offshore Engineering

MSc/PgDip/PgCert

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

Whether you are interested in offshore renewable energy or traditional offshore oil and gas engineering, if you want to help develop stable, secure and financially viable solutions to the fundamental energy challenges affecting society in the 21st century then this is the course for you. This course offers two study routes: i) management ii) engineering.

## Renewable Energy

MSc/PgDip/PgCert

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

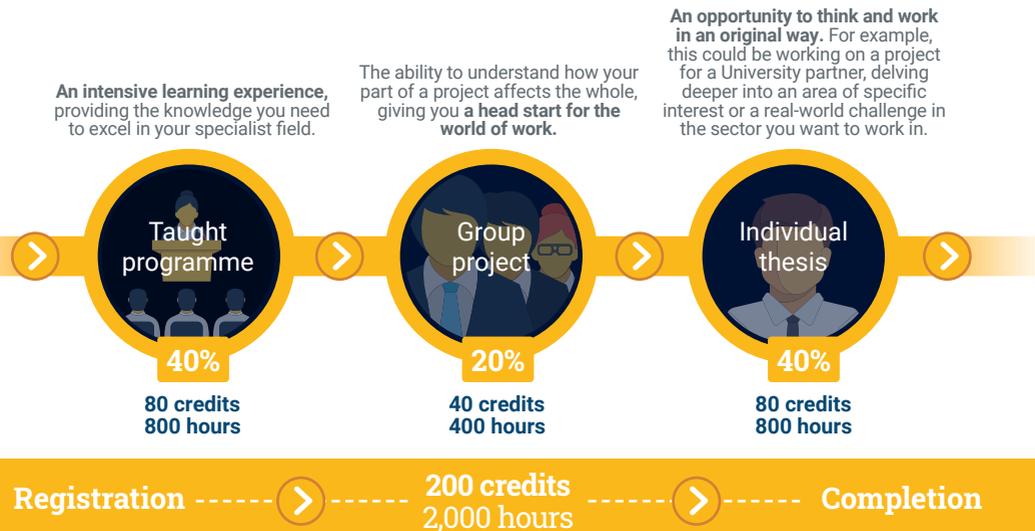
The Renewable Energy MSc will equip you with the advanced knowledge and skills to develop a successful career in the rapidly growing renewable energy sector. Two study routes are available on this course: i) management ii) engineering.

The Energy and Power MSc courses comprise one and two week modules. The one week modules, delivered before the Christmas break, are designed to provide you with the essential learning and more theoretical elements of your course. Whilst the two week modules, mostly delivered throughout January and February, provide you with the opportunity to apply this knowledge in practical and case study based modules.

# Course structure

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

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



## Careers

An exciting and rewarding career within energy awaits you. Whatever your specialism there are numerous opportunities to shape your career and begin making a significant change to society.

You could soon join our graduates and alumni around the globe, who are already initiating change within the energy sector in roles and at organisations such as:

### Roles:

- Air Propulsion Engineer,
- Design Engineer,
- Operations Engineer,
- Principal Process Engineer,
- Senior Project Engineer,
- Wind Farm Developer.

### Organisations:

- EDF,
- GE Oil and Gas,
- L'Oréal S.A.,
- Rolls-Royce Marine AS,
- Shell Petroleum ,
- Siemens.

# Industry links

Cranfield has unrivalled links with industry. You will benefit from our extensive contacts and track record of close collaboration with government and the energy and power sector. These links include industrial advisory panels and project sponsors.

Companies and organisations we work and collaborate with to research and develop sustainable energy and power technologies across the sector include: UK Power Networks, SEMLEP, Carbon Trust, Cadent, Intecsea, Saudi Aramco, MBNL, BP and many more.

## 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 energy and power industrial advisory panel include:



SIEMENS

## Industry-sponsored group projects

Cranfield's group project experience provides you with the opportunity to take responsibility for a consultancy-type project while working under academic supervision. Below are some recent examples:

- Fatigue life assessment of offshore wind turbine bolted connections,
- Peer to peer energy trading with battery electric vehicles,
- CO2 and H2 as feedstock for chemical industry,
- Parametric investigation and optimisation of a novel ocean-going robotic platform,
- Modelling oil spill response under fast current,
- Modelling conditions in representative gas,
- Turbine environments,
- Design specification and engineering development of cold thermal energy system,
- Working towards a green airport through electrification.

# Academic staff

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



**Professor Phil Hart**, Director of Energy and Power

Phil has held a series of senior roles within the energy and power sector in the UK, Asia and North America throughout his career. Phil has worked with governments and industry, securing technology development funding from, among others, the United States Departments of Energy and Defence, Shell, BP, Huawei and Petrobras.

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



**Dr Gill Drew**, Director of the Energy and Power MSc Programme

Gill is responsible for overseeing and managing the delivery of the MSc courses in Energy and Power. Gill's research focusses on climate change adaptation and the impacts of waste and energy on the environment.

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



**Professor Phil Longhurst**, Head of Climate and Environmental Protection Centre

Phil leads a team of academics with research programmes into reducing green house gas emissions, resource loss, energy recovery from waste and pollution reduction. His research includes working with the design and manufacturing, waste management, bioenergy energy and regulation sectors.

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



**Dr Nazmiye Ozkan**, Head of Energy Systems Strategy Centre

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 level.

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



**Professor Chris Sansom**, Head of Renewable Energy Systems Centre

Chris has over thirty years' experience in industry and teaching, and spearheads UK research on Concentrating Solar Power (CSP). Current research includes solar thermal technologies, materials and applications, thermal energy storage and thermal energy harvesting.

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



**Professor Nigel Simms**, Head of Thermal Energy Systems and Materials Centre

Nigel has wide-ranging experience of the performance of components and materials in advanced power generation systems, as well as experience in the design and development of large laboratory scale test rigs and pilot plants for investigating materials performance in realistic industrial conditions.

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

# Key facts and statistics

## Course information



**Full-time**  
**One year**



**Part-time**  
**Up to three years**



**Start date**  
**October**



**MSc/PgDip/PgCert**  
All Cranfield Energy and Power courses offer PGCert, PGDip and MSc.



**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**  
**21% UK**  
**27% EU**  
**52% Rest of world**



**Typical cohort age**  
**20-30 years**



**Average cohort size**  
**Approximately 12**



**20% Female**  
**80% Male**

\*These figures give an indication of the course make-up at registration across Energy and Power for the the entry year 2019-2020.

## Accreditation

The following courses are accredited by the Institution of Mechanical Engineers: Advanced Mechanical Engineering MSc, Advanced Process Engineering MSc, Energy Systems and Thermal Processes MSc, Offshore Engineering MSc and Renewable Energy MSc.

The following courses are accredited by the Energy Institute: Advanced Chemical Engineering MSc, Advanced Mechanical Engineering MSc, Advanced Process Engineering MSc, Energy Systems and Thermal Processes MSc, Offshore Engineering MSc and Renewable Energy MSc.



# 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 online on our website.

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



# Life at Cranfield

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:

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

Cranfield University works with over

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

These organisations include:

**AIRBUS**

**BAE SYSTEMS**

**ENGIE**



LOCKHEED MARTIN

Recycling  
Technologies

**TOTAL**

**UK  
RI** UK Research  
and Innovation



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

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

Cranfield University  
Cranfield  
MK43 0AL, UK

T: +44 (0)1234 758082  
E: [studyenergy@cranfield.ac.uk](mailto:studyenergy@cranfield.ac.uk)



@cranfielduni



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[blogs.cranfield.ac.uk](http://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. Some photographs in this publication were taken prior to the 2020 pandemic. Cranfield University follows the latest Government guidelines on social distancing and use of personal protective equipment (PPE). [SWEE-EP-September-2020](#).