



Offshore Engineering

MSc, PgDip, PgCert



This MSc will prepare you for a career in offshore renewable energy or traditional offshore oil and gas engineering. Cranfield's strong track record in offshore renewable energy projects and close engagement with the oil and gas sector over the last 20 years will enable you to forge a successful and rewarding career in this rapidly developing discipline. With a choice of engineering or management study routes, this course will enable you to contribute to developing stable, secure and financially viable solutions to the fundamental energy challenges affecting society in the 21st century.

Who is it for?

This course is suitable for engineering, maths or science graduates who wish to develop a career in offshore engineering. It develops professional engineers and scientists with the multidisciplinary skills and ability to analyse current and future offshore energy engineering problems.

You gain the new skills needed across this fast developing sector, together with the fundamental engineering or management understanding necessary, for any application.

Course structure

- Eight taught modules (40%),
- Group project or dissertation: (20%),
- Individual research project (40%).

Informed by industry

The Offshore Engineering MSc is closely aligned with industry to ensure that you are fully prepared for your career:

- Close engagement with the offshore sector over the last 20 years has produced long-standing strategic partnerships with the sector's most prominent players,
- An industrial advisory panel ensures that the course meets the demands of employers, and includes representatives from Shell, the Society of Underwater Technology and ABS,
- Learn from lecturers with extensive, experience of working with industry on solving real world offshore engineering challenges,
- The Institution of Mechanical Engineers accredits the course, ensuring professional recognition and relevance to employers.

Future career

Graduates with an MSc in Offshore Engineering develop diverse and rewarding careers in a range of different industries including offshore renewables, oil & gas, aquaculture systems and beyond.

Successful students move on to roles in the challenging fields of offshore oil and gas exploration, underwater engineering, pipeline engineering, risk management in offshore and marine operations, and the emerging offshore renewable energy industry.

The international nature of such roles mean that career opportunities are not restricted to the domestic market; and due to our strong reputation and industrially relevant course content, Cranfield graduates are able develop careers around the world.

Key information

Duration:

MSc: one year full-time, two to three years part-time.
PgDip, PgCert: one year full-time, two years part-time.

Start date:

Full-time: October.
Part-time: October.

Qualification:

MSc, PgDip, PgCert.

Location:

Cranfield campus.

Entry requirements

A first or second class UK Honours degree in a relevant science, engineering or related discipline, or the international equivalent of these UK qualifications. Other relevant qualifications, together with significant experience, may be considered.

Overview of taught modules

Compulsory modules (both routes)

(all the modules in this list need to be taken as part of this course).

Applied Materials and Corrosion

This module provides a knowledge and understanding of the corrosion processes that occur on structural materials and the impact on their mechanical performance.

Energy Systems Case Studies

You will be provided with a deep understanding of the truly multidisciplinary nature of a real industrial project. Using a relevant case study, the scientific and technical concepts learned during the previous modules will be brought together and used to execute the analysis of the case study.

Management for Technology

This module covers the importance of technology leadership in driving the technical aspects of an organisation's products, innovation, programmes, operations and strategy, especially in today's turbulent commercial environment with its unprecedented pace of technological development.

Materials and Corrosion

This module will enable you to understand the structure and properties of materials, their possible corrosion responses, and to apply this knowledge to specific applications.

Risk and Reliability Engineering

Risk and Reliability Engineering introduces the principles of risk and reliability engineering and associated tools and methods to solve relevant engineering problems in industry.

Engineering route compulsory modules

Computational Fluid Dynamics for Renewable Energy

The aim of this module is to introduce the computational fluid dynamics (CFD) techniques and tools for modelling, simulating and analysing practical engineering problems related to renewable energy, with hands on experience using commercial software packages used in industry.

Engineering Stress Analysis: Theory and Simulations

The examination of finite element analysis (FEA) for various practical applications in conjunction with relevant case studies will allow you to combine theoretical understanding with practical experience.

Structural Integrity

This module provides an understanding of pertinent issues concerning the use of engineering materials and practical tools for solving structural integrity and structural fitness-for-service problems.

Management route compulsory modules

Advanced Maintenance Engineering and Asset Management

This module will provide the knowledge and skills necessary to design advanced maintenance, monitoring and asset management strategies for complex engineering systems through the lifecycle.

Energy Economics and Policy

This module covers a variety of topics related to energy demand, supply, prices, renewable vs depletable resources and environmental consequences of energy consumption and production. It will demonstrate how key economic principles are used in various energy-environment models to inform energy and climate policy.

Health, Safety, Security and the Environment

Within the scope of a single module, it is not possible to cover all four aspects in depth. The module is designed to provide you with the competencies to assess and evaluate the relevant international standards as well as the legislation and regulatory requirements. There is a strong focus on the use of case studies to provide examples of how standards and legislation are implemented in practice.

Group project

The group project is an applied, multidisciplinary, team-based activity. Often solving real-world, industry-based problems, you will be provided with the opportunity to take responsibility for a consultancy-type project while working under academic supervision. Success is dependent on the integration of various activities and working within agreed objectives, deadlines and budgets. Transferable skills such as team work, self-reflection and clear communication are also developed.

Recent group projects include:

- Conceptual and preliminary design of a SPAR for a 5 MW VAWT,
- Investigation of severe slugging in pipelines.

Individual project

The individual project is the chance for you to focus on an area of particular interest to you and your future career. You can select the individual project in consultation with the Thesis Co-ordinator and your Course Director. These projects provide you with the opportunity to demonstrate your ability to carry out independent research, think and work in an original way, contribute to knowledge, and overcome genuine problems in the offshore industry. Many of the projects are supported by external organisations.

Accreditation and rankings

This MSc degree is accredited by the Institution of Mechanical Engineers (IMechE)



**Institution of
MECHANICAL
ENGINEERS**

Cranfield ranks 5th in the UK for mechanical, aeronautical and manufacturing engineering in the QS World University Rankings 2019.



**QS WORLD
UNIVERSITY
RANKINGS**

2019

**ENGINEERING - MECHANICAL,
AERONAUTICAL & MANUFACTURING**

TOP 50

Contact details

T: +44 (0)1234 758082

E: studyenergy@cranfield.ac.uk

For further information please visit
www.cranfield.ac.uk/oe