UNIVERSITY OF LIVERPOOL

MSc (Eng)

# Advanced Mechanical Engineering

| Study mode | Duration | |
|---|---|---|
| Full-time | 12 months | Apply by: **15 January 2027**<br>Starts on: **25 January 2027** |

## About this course

Study Advanced Mechanical Engineering and learn to design, build and test new products, processes and systems. You will develop a sound understanding of Advanced Mechanical Engineering principles and the ability to undertake teamwork and communicate ideas, valuable skills for your future career.

## Introduction

**Please note, if you're applying for January 2027 entry, your course welcome starts on 25 January 2027. Teaching starts on the 1 February 2027.**

The core modules studied on the programme will develop your understanding and knowledge of the principles of Advanced Mechanical Engineering to an advanced level. They include specialist knowledge in thermo and fluid dynamics, advanced materials, advanced manufacturing techniques, alternative and conventional energy generation methods and nuclear engineering. You will be taught techniques for managing projects and research, giving you highly desirable skills for working in industry.

This programme aligns with the current accredited undergraduate integrated Masters MEng 4th year in Mechanical Engineering with co-taught M level modules from the existing programme organised in two 12-week semesters with examinations at the end of each

semester worth 120 credits from a total of 180. This is then combined with an MSc advanced research project over the summer term worth the remaining 60 credits.

## What you'll learn

- Thermo and fluid dynamics
- Combustion in internal combustion engines
- An understanding of the advantages and disadvantages of alternative and conventional energy generation methods
- An understanding of nuclear engineering, with coverage going from the atomic scale through to the bulk scale
- An understanding of material failure analysis
- The principles of advanced manufacturing techniques using lasers
- The properties and limitations of a range of ‘smart materials’
- Technical writing skills to support project planning
- Project management skills.

## Accreditation

This programme is fully accredited by the Institution of Mechanical Engineers.

### Accreditation in detail

## Institution of Mechanical Engineers

All mechanical engineering programmes are accredited, or pending accreditation, by the Institution of Mechanical Engineers. This is the professional body for Mechanical Engineers. Our programmes are a recognised qualification on the route to Chartered Engineer status.

Back to top

# Course content

Discover what you'll learn, what you'll study, and how you'll be taught and assessed.

### Semester one

This course is available to start in September or January. If you choose to start in January, you'll undertake the Semester two modules first, from January to May. This will be followed by your research project over the summer and then your Semester one modules from September to January. On successful completion of the course, following a January start, you can expect to graduate at our summer graduation ceremonies.

Please note, UK students are exempt from Technical Writing for Engineers and should instead take Project Management. EU/International students with strong English language skills can be exempt as well, subject to Programme Director's approval.

If you're a University of Liverpool Engineering graduate or have a relevant background, you may be able to replace Engineering Fluid Mechanics with Advanced Fluid Mechanics.

## Modules

| Compulsory modules | Credits |
|---|---|
| ENGINEERING FLUID MECHANICS (MECH627) | 15 |
| NUCLEAR TECHNOLOGIES (MECH434) | 7.5 |
| TECHNICAL WRITING FOR ENGINEERS (ENGG596) | 7.5 |
| ADDITIVE MANUFACTURING (MNFG603) | 15 |

| Optional modules | Credits |
|---|---|
| PROJECT MANAGEMENT (MNGT502) | 7.5 |
| COMPUTER AIDED DESIGN (MNFG604) | 7.5 |
| FINITE ELEMENT ANALYSIS (MECH452) | 7.5 |
| LASER MATERIALS PROCESSING (MECH605) | 15 |
| ADVANCED FLUID MECHANICS AND AERODYNAMICS (AERO406) | 15 |
| ADDITIVE MANUFACTURING (MNFG603) | 15 |

Programme details and modules listed are illustrative only and subject to change.

### Semester two

This course is available to start in September or January. If you choose to start in January, you'll undertake the Semester two modules first, from January to May. This will be followed by your research project over the summer and then your Semester one modules from September to January. On successful completion of the course, following a January start, you can expect to graduate at our summer graduation ceremonies.

## Modules

| Compulsory modules | Credits |
|---|---|
| ADVANCED MANUFACTURING WITH LASERS (MECH607) | 15 |
| ENERGY AND THE ENVIRONMENT (MECH433) | 15 |
| STRUCTURAL INTEGRITY (ENGG409) | 15 |

| Compulsory modules | Credits |
| --- | --- |
| ADVANCED ENGINEERING MATERIALS (MATS631) | 15 |

Programme details and modules listed are illustrative only and subject to change.

### Final project

This course is available to start in September or January. If you choose to start in January, you'll undertake the Semester two modules first, from January to May. This will be followed by your research project over the summer and then your Semester one modules from September to January. On successful completion of the course, following a January start, you can expect to graduate at our summer graduation ceremonies.

## Modules

| Compulsory modules | Credits |
| --- | --- |
| MSC(ENG) PROJECT (60 CREDITS) (ENGG660) | 60 |

Programme details and modules listed are illustrative only and subject to change.

### Teaching and assessment

## How you'll learn

You'll learn across a variety of teaching methods, like lectures, seminars, and tutorials – some online and some in person. You'll also access asynchronous online content on a weekly basis with personal tutorials and take part in group work projects, based on engineering grand challenges faced by global society today.

There's opportunity to get hands-on too with active learning lab sessions, laser micromachining and lab work using special design software such as Finite Element.

## How you're assessed

Across your modules, you'll be assessed in a number of different ways, including exams, lab activity, case studies, reports and a design of a product for assembly.

Your final project work will be based on a topic of industrial or scientific relevance and will be carried out in laboratories in the University or at an approved placement in industry. You'll examine this project in your dissertation and show evidence of in-depth understanding, mastery of research techniques, ability to analyse assembled data, and assessment of outcomes.

## Liverpool Learning Framework

At Liverpool, we take a distinctive approach to education through the Liverpool Learning Framework. This means teaching that is engaging, inclusive and designed to help you succeed during your studies and beyond.

You'll develop specialist subject knowledge alongside the skills employers value most, including:

- Digital fluency
- Confidence
- Global citizenship

Our curriculum is characterised by the three Liverpool Hallmarks:

- Research-connected teaching - learning informed by the latest ideas and discoveries
- Active learning - taking part, applying knowledge and learning by doing
- Authentic assessment - assessments designed around real-world tasks and challenges

We also embed key priorities across our curriculum, including AI literacy, employability, and sustainability, helping you prepare for the future and make a positive impact in the world.

We're committed to creating a supportive and inclusive learning environment where every student can thrive.

Back to top

## Careers and employability

We equip our students for rewarding careers and our graduates have found jobs in a wide range of industries and organisations, both in the UK and abroad.

Programmes include a strong practical element and incorporate the latest academic and industry research, enabling you to work effectively at the forefront of engineering.

Career Destinations are wide and varied**.** Some employers include:

- Agusta Westland
- NHS
- BAE Systems
- Ford
- Jaguar
- Unilever
- Armed Forces
- QinetiQ
- National and International bodies such as EPSRC and the European Commission.

## Career support from day one to graduation and beyond

**Career planning**

**From education to employment**

**Networking events**

Back to top

# Fees and funding

Your tuition fees, funding your studies, and other costs to consider.

### Tuition fees

### UK fees (applies to Channel Islands, Isle of Man and Republic of Ireland)

Full-time place, per year - £14,000

### International fees

Full-time place, per year - £34,000

Tuition fees are for the academic year 2026/27.

Tuition fees cover the cost of your teaching and assessment, operating facilities such as libraries, IT equipment, and access to academic and personal support.

- You can pay your tuition fees in instalments.
- All or part of your tuition fees can be funded by external sponsorship.
- International applicants who accept an offer of a place will need to pay a deposit.

If you're a UK national, or have settled status in the UK, you may be eligible to apply for a Postgraduate Loan worth up to £12,858 to help with course fees and living costs. **Learn more about paying for your studies**.

## Additional costs

We understand that budgeting for your time at university is important, and we want to make sure you understand any course-related costs that are not covered by your tuition fee. You can find information on the general and subject-specific costs you could expect to incur on our study costs webpage.

Back to top

# Entry requirements

The qualifications and exam results you'll need to apply for this course.

### Postgraduate entry requirements

You will normally need a 2:1 honours degree, or above, or equivalent. This should be in an engineering or science subject that provides appropriate knowledge of core engineering science topics.

Applicants with a 2:2 honours degree, or equivalent, will be considered on an individual basis.

### International qualifications

Select your country or region to view specific entry requirements.

Many countries have a different education system to that of the UK, meaning your qualifications may not meet our entry requirements. Completing your Foundation Certificate, such as that offered by the University of Liverpool International College, means you're guaranteed a place on your chosen course.

# English language requirements

You'll need to demonstrate competence in the use of English language, unless you're from a majority English speaking country.

We accept a variety of international language tests and country-specific qualifications.

International applicants who do not meet the minimum required standard of English language can complete one of our Pre-Sessional English courses to achieve the required level.

### IELTS

6.5 overall, with no component below 6.0

**TOEFL iBT**

If you took a TOEFL test on or before 20 January 2026, you'll need 88 overall, with minimum scores of listening 19, writing 19, reading 19 and speaking 20. If you took a TOEFL test from 21 January 2026 onwards, when a new scoring system was introduced, you'll need 4.5 overall, with 4 or above in all components. TOEFL Home Edition not accepted.

**Duolingo English Test**

125 overall, with writing not less than 125, speaking and reading not less than 115, and listening not below 110. For academic year 2025/26 only, we will also accept the production, literacy, comprehension and conversation score set: 120 overall, with no component below 105.

**Pearson PTE Academic**

61 overall, with no component below 59

**LanguageCert Academic**

70 overall, with no skill below 65

**PSI Skills for English**

B2 Pass with Merit in all bands

**INDIA Standard XII**

National Curriculum (CBSE/ISC) - 75% and above in English. Accepted State Boards - 80% and above in English.

**WAEC**

C6 or above

## Pre-sessional English

Do you need to complete a Pre-sessional English course to meet the English language requirements for this course?

The length of Pre-sessional English course you'll need to take depends on your current level of English language ability.

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### Pre-sessional English in detail

If you don't meet our English language requirements, we can use your most recent IELTS score, or the equivalent score in selected other English language tests, to determine the length of Pre-sessional English course you require.

Use the table below to check the course length you're likely to require for your current English language ability and see whether the course is available on campus or online.

| Your most recent IELTS score | Pre-sessional English course length | On campus or online |
|---|---|---|
| 6.0 overall, with writing at 6.0 and no component below 5.5 | 6 weeks | On campus or online |
| 5.5 overall, with writing at 5.5 and no component below 5.0 | 10 weeks | On campus or online |
| 5.5 overall, with no more than one component at 5.0 | 12 weeks | Online |
| 5.5 overall, with no component below 5.0 | 20 weeks | On campus |
| 5.0 overall, with no more than one component at 4.5 | 30 weeks | On campus |
| 4.5 overall, with no more than one component at 4.0 | 40 weeks | On campus |

If you've completed an alternative English language test to IELTS, we may be able to use this to assess your English language ability and determine the Pre-sessional English course length you require.

Please see our guide to Pre-sessional English entry requirements for IELTS 6.5 overall, with no component below 6.0, for further details.

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Back to top

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