

Advanced Lightweight and Composite Structures MSc

www.cranfield.ac.uk/LWCompStructures



With applications in aerospace, automotive, motorsport, marine and renewable energy industries, this course covers topics in structural design and analysis, impact and crashworthiness, material characterisation and failure analysis, advanced simulation of lightweight metallic and composite structures.

Designed to meet the requirement of next generation engineers, you will gain the knowledge and skills to design and develop green and sustainable aircraft, electric vehicles and wind turbine structures.

The course provides knowledge and skills in the design and analysis of advanced lightweight materials and structures for next-generation engineers and researchers. It covers key topics in lightweight material characterisation and failure analysis, thinwalled structural design and analysis, impact and crashworthiness, and the latest numerical techniques and advanced simulation.

Delivered with special attention to industry challenges on achieving demanding sustainability and the net zero carbon emission targets, this course will equip you with strong experimental, numerical and analytical skills in the design and analysis for both composite and metallic structure.

Who is it for?

The MSc is suitable for graduates with engineering, science, applied science or related degrees, who are keen to pursue careers as design engineers, stress engineers, research and development engineers, numerical code developers, consultants, and academic researchers.

Our students typically hold first degrees or equivalent in mathematics, physics, computing or an engineering discipline. We also welcome applications from candidates from other disciplines and mature applicants with alternative qualifications.

Your career

Industry-driven research makes our graduates some of the most desirable in the world for recruitment by companies competing in the structural engineering sector, which forms a large worldwide industry.

Students who enrol on the Advanced Lightweight and Composite Structures MSc come from a variety of backgrounds. Many have specific careers in mind, such as working in automotive or aerospace disciplines (structural design or crash protection), materials development for defence applications, or working in the field of numerical code developments/consultancy.

Overview

Start date October

Duration MSc: one year

Qualification MSc

Study type Full-time

Structure

Taught modules 40%, group project 20%, individual research project 40%

Campus Cranfield campus

Entry requirements

We welcome applications from talented individuals of all backgrounds and each application is considered on its individual merit. Usually applicants must hold:

A UK lower second-class (2:2) undergraduate degree with honours, as a minimum, or equivalent international qualification.

Ideally applicants will have studied in mathematics, physics, computing or an engineering subject.

Find information about equivalent gualifications in your country on our International entry requirements page.

ATAS clearance

This course requires Academic Technology Approval Scheme (ATAS) clearance.

ATAS is run by the UK Government's Foreign, Commonwealth and Development Office (FCDO) and applies to international students, except exempt nationalities, who need a visa to study in the UK. Further information can be found in our Application guide.

Fees

Please see www.cranfield.ac.uk/fees for detailed information about fee status, full-time and part-time fees as well as deposit requirements and bursary and scholarship information.

Course details

You will complete eight compulsory modules.

The course employs a wide range of teaching methods designed to create a demanding and varied learning environment including structured lecture programmes, tutorials, case studies, hands-on computing, individual projects and guest lectures.

Modules

Keeping our courses up-to-date and current requires constant innovation and change. The modules we offer reflect the needs of business and industry and the research interests of our staff. As a result, they may change or be withdrawn due to research developments, legislation changes or for a variety of other reasons. Changes may also be designed to improve the student learning experience or to respond to feedback from students, external examiners, accreditation bodies and industrial advisory panels.

To give you a taster, we have listed below the compulsory and elective (where applicable) modules which are currently affiliated with this course. All modules are indicative only, and may be subject to change for your year of entry

Compulsory modules

All the modules in the following list need to be taken as part of this course.

Introduction to Continuum Mechanics

Advanced Composite Analysis and Impact

Thin-walled Structures

Finite Element Methods

Materials Characterisation and Failure Simulations

Structural Stability

Advanced Simulation for Impact

Crashworthiness

"My degree played an important role in helping me gain my current role at Scuderi Ferrari F1. It was key on my CV and highly rated by composite-oriented workers from companies that I've been in contact with. In particular, the technical knowledge that I've learnt helps me everyday in my current role. As well as the professional approach that I experienced working on my group project and individual research project that has taught me how to deal with real engineering problems."

Ana Casares Crespo

Composite Design Engineer, Scuderia Ferrari F1, Advanced Lightweight and Composite Structures MSc (2020)

Accreditation

The Advanced Lightweight and Composite Structures MSc is accredited by Royal Aeronautical Society (RAeS) and the Institution of Mechanical Engineers on behalf of the Engineering Council as meeting the requirements for further learning for registration as a Chartered Engineer (CEng). Candidates must hold a CEng accredited BEng/BSc (Hons) undergraduate first degree to show that they have satisfied the educational base for CEng registration.



For more information contact our Admissions Team: T: +44 (0)1234 758082

Visit campus for yourself and meet current students and our academics at our next Open Day: www.cranfield.ac.uk/openday November 2024

Every effort is made to ensure that the information provided here is correct at the time it is published. Please check our website for the latest information.