Aerospace Dynamics MSc

www.cranfield.ac.uk/Aerodynamics

The aerospace industry in the UK is the largest in the world, outside of the USA. Aerodynamics and flight dynamics will remain a key element in the development of future aircraft and in reducing civil transport environmental issues, making significant contributions to the next generation of aircraft configurations.

This course provides both fundamental and applied knowledge to understand airflows, vehicle dynamics and control and methods for computational modelling. It will provide you with practical experience in the measurement, analysis, modelling and simulation of airflows and aerial vehicles.

Who is it for?

Suitable if you have an interest in aerodynamic design, flow control, flow measurement, flight dynamics and flight control. Choose your specialist option from the following once you commence your studies:

- Flight Dynamics option: if you want to develop a career in flight physics and aircraft stability and control, more specifically in the fields of flight control system design, flight simulation and flight testing;
- Aerodynamics option: if you want to develop a career in flight physics and specifically in the fields of flow simulation, flow measurement and flow control.

Your career

Industry-driven research makes our graduates some of the most desirable in the world for recruitment in a wide range of career paths within the aerospace and military sector. A successful graduate should be able to integrate immediately into an industrial or research environment and make an immediate contribution to the group without further training. Increasingly, these skills are in demand in other areas including automotive, environmental, energy and medicine.

Recent graduates have found positions in the aerospace, automotive and related sectors, taking roles such as:

- Advanced Simulation Engineer,
- Aerodynamics Engineer,
- Aircraft Performance Engineer,
- Flight Control Engineer,
- Flight Test Engineer,
- Lead Flow Analyst,
- Mechanical Design Engineer,
- Senior Aerodynamicist,
- Wind Tunnel Engineer.

Overview

Start date
October

Duration
MSc: Full-time - one year; Part-time - up to three years;
PgCert: Full-time - up to one year; Part-time - two years

Qualification
MSc, PgCert

Study type
Full-time / Part-time

Structure
Taught modules 50%, individual project 50%

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 or an engineering subject.

Find information about equivalent qualifications 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

This course consists of optional taught modules, an individual research project and a group flight test project.

The group flight test project consists of two compulsory modules that offer an initial introduction to aerospace dynamics and provide grounding for the group flight test. Choice is a key feature of this course, with specialist options in either aerodynamics or flight dynamics. Choose your option once you have commenced your studies.

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 Aircraft Aerodynamics

Flight Experimental Methods

Elective modules

Select eight from the list below

Modelling of Dynamic Systems

Compressible Flows

Viscous Flow

Control Systems

Introduction to CFD

Flight Dynamics Principles

Air-Vehicle Modelling and Simulation

Launch and Re-Entry Aerodynamics

Transonic Aerodynamic Design

Technology for Sustainable Aviation

Flying Qualities and Flight Control

CFD for Aerospace

Multivariable Control Systems for Aerospace Applications

Fundamentals of Rotorcraft Performance, Stability and Control

Fundamentals of Aircraft System Identification

Experimental Aerodynamics

Aerospace Navigation and Sensors

> "I chose to study at Cranfield University as it is renowned in within the aeronautics industry. A highlight from my time at Cranfield would be using the different facilities available."
>
> **Antoine Francannet**
> current student, Aerospace Dynamics MSc

Accreditation

The Aerospace Dynamics MSc is accredited by the Royal Aeronautical Society (RAeS) 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. Please note accreditation applies to the MSc award and PgCert does not meet in full the further learning requirements for registration as a Chartered Engineer.

ROYAL AERONAUTICAL SOCIETY

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

February 2025