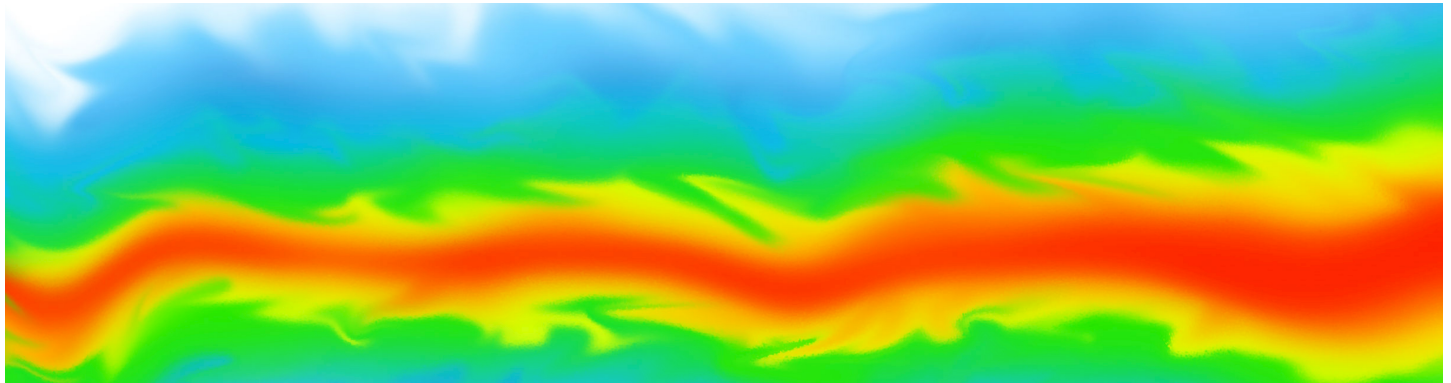# Computational Fluid Dynamics MSc

www.cranfield.ac.uk/CompFluidDynamics

There is an increasing global demand for computational fluid dynamics (CFD) specialists with practical and technical knowledge. This course, designed to reflect the wide applications of computational fluid dynamics, will enable you to gain the knowledge and appreciation necessary for a strong foundation in a career in this exciting engineering discipline.

You will learn to understand, write and apply CFD methods across a broad range of fields, from aerospace, multi-phase flow and heat transfer to microflows, bio-medical flows and fluid-structure interaction problems.

Who is it for?

This course is designed to meet the education needs of graduates and professional engineers who are looking to kick-start an industrial or research career in the ever-evolving field of computational fluid dynamics. It bridges the gap between the introductory level of undergraduate courses and the applied expertise acquired by engineers using CFD in industry. You will gain the knowledge and practical skills to apply CFD methods, necessary for a strong foundation to a career in this exciting engineering discipline.

Your career

Strategic industrial links ensure that the course meets the needs of the organisations competing within the computational sector, therefore making our graduates some of the most desirable in the world for companies to recruit.

An increasing demand for CFD specialists with in-depth technical knowledge and practical skills within a wide range of sectors has seen our graduates employed in a range of roles.

World-leading companies that employ our graduates include:

  - BAE Systems
  - Rolls-Royce
  - Airbus
  - Jaguar Land Rover
  - Siemens
  - Bentley
  - Formula 1 teams

Aproximately one third of our graduates go on to register for PhD degrees, many on the basis of their MSc individual research project. Research topics are often supplied by individual companies on in-company problems with a view to employment after graduation - an approach that is being actively encouraged by a growing number of industries.

Overview

Start date
October

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

Qualification
MSc

Study type
Full-time / Part-time

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

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 discipline.

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

Applicants who do not fulfil the standard entry requirements can apply for the Pre-master's course, successful completion of which will qualify them for entry to this course for a second year of study.

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

The taught modules are delivered from October to April via a combination of structured lectures and computer-based labs.

The core part of the course consists of modules which are considered to represent the necessary foundation of the subject material. The course is designed to reflect the broad range of CFD applications by providing a selection of a group project themes in the field of aerospace, automotive or energy, with direct industrial applications. Students on the part-time programme will complete all of the compulsory modules based on a flexible schedule that will be agreed with the Course Director.

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 Fluid Mechanics and Heat Transfer

Numerical Methods and High Performance Computing

Grid Generation / CAD

Data Analysis and Uncertainty

Turbulence Modelling

Numerical Modelling for Compressible Flows

Numerical Modelling for Incompressible Flows

"After extensive online research and reviewing blogs, Cranfield consistently emerged as a top choice. The programme's structure, with modules building upon each other, resonated with my learning style. The true highlights of the programme were the opportunities to develop my own solvers (using FORTRAN) and leverage commercial software to tackle real-world engineering problems."

Aswath Ashok
current student, Computational Fluid Dynamics MSc

Accreditation

The Computational Fluid Dynamics MSc is accredited by Mechanical Engineers (IMechE) and 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.

February 2025

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.