Aerospace Vehicle Design - Aircraft Design option

MSc

Modern aircraft are a complex combination of aerodynamic performance, lightweight durable structures and advanced systems engineering. This specialist MSc Aerospace Vehicle Design option explores how elements can be designed and integrated using up-to-date methods and techniques. This course is suitable for students with a background in aeronautical or mechanical engineering or those with relevant industrial experience, and prepares graduates for careers as project design engineers, systems design, structural design or avionic engineers in aerospace or related industries, with the aim of progressing to technical management/chief engineer. This Aircraft Design option aims to provide a comprehensive overview of aircraft performance, structures and systems. A holistic teaching approach is taken to explore how the individual elements of an aircraft can be designed and integrated using up-to-date methods and techniques. You will learn to understand how to select specific systems such as fuel systems, and their effect on the aircraft as a whole. Aerospace Vehicle Design at Cranfield University was one of the original foundation courses of the College of Aeronautics. Graduates of this course are eligible to join the Cranfield College of Aeronautics Alumni Association (CCAAA), an active community which hold a number of networking and social events throughout the year.

Course structure

The Aircraft Design option consists of a taught component, a group design project and an individual research project.

Individual project

The individual research project aims to provide the training necessary for you to apply knowledge from the taught element to research. The project may be theoretical and/or experimental and drawn from a range of topics related to the course and suggested by teaching staff, your employer or focused on your own area of interest.

Group project

The extensive group design project is a distinctive and unique feature of this course. This teamwork project takes place over six months and recreates a virtual industrial environment bringing together students with various experience levels and different nationalities into one integrated design team.

Future career

The Aerospace Vehicle Design course is valued and respected by employers worldwide. The applied nature of this course ensures that our graduates are ready to be of immediate use to their future employer and has provided sufficient breadth of understanding of multidiscipline design to position them for accelerated career progression. Graduates from this option have gone onto pursue engineering careers in disciplines such as structural design, stress analysis or systems design. Many of our former graduates occupy very senior positions in their organisations, making valuable contributions to the international aerospace industry. Typical student destinations include BAE Systems, Airbus, Dassault and Rolls-Royce.

Example modules

Compulsory:

- Aircraft Stability and Control,
- Aeroelasticity,
- Aeronautical Communication Systems,
- Aircraft Performance,
- Fatigue Fracture Mechanics and Damage Tolerance,
- Design of Airframe Systems,
- Design for Manufacture and Operation,
- Detail Stressing,
- Flight Experience,
- Design and Analysis of Composite Structures,
- Initial Aircraft Design,
- Loading Actions,
- Inertial and Satellite Navigation Systems,
- Radio Systems,
- Reliability, Safety Assessment and Certification.

Elective:

- Aircraft Aerodynamics,
- Aircraft Power Plant Installation,
- Aerospace System Development and Life Cycle Model,
- Computer Aided Design (CAD),
- Finite Element Analysis,
- Integrated Vehicle Health Management,
- Landing Gear Design,
- Structural Dynamics,
- Structural Stability.

Duration:
MSc: Full-time - one year.

Start date:
October or March.

Location:
Cranfield Campus.

Entry requirements:
A first or second class UK Honours degree (or equivalent) in an engineering discipline.

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

ATAS Certificate:
Students requiring a visa to study in the UK may need to apply for an ATAS certificate to study this course.

Contact details

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For further information please visit

www.cranfield.ac.uk/courses/taught/avd-option-aircraft-design