



# Aerospace Vehicle Design - Structural Design option

## MSc

This specialist option of the MSc Aerospace Vehicle Design provides you with an understanding of aircraft structures, airworthiness requirements, design standards, stress analysis, fatigue and failure and fundamentals of aerodynamics and loading. Also covered is the suitable selection of materials, both metallic and composite. Manufacturers of modern aircraft are demanding more lightweight and more durable structures. Structural integrity is a major consideration of today's aircraft fleet. For an aircraft to economically achieve its design specification and satisfy airworthiness regulations, a number of structural challenges must be overcome. This course trains engineers to meet these challenges, and prepares them for careers in civil and military aviation. It is suitable if you have a background in aeronautical or mechanical engineering, or relevant industrial experience. 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 holds a number of networking and social events throughout the year.

### Course structure

The Structural Design option consists of a taught component and an individual research project. In addition to the compulsory modules, you have an extensive choice of elective modules to match to your specific interests.

### Individual project

The individual research project aims to provide the training necessary for you to apply knowledge from the taught element to research, and takes place from January to September. It is often associated with a realworld problem that one of our industry partners are looking to resolve.

### 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 on to 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:

- Design and Analysis of Composite Structures,
- Fatigue, Fracture Mechanics and Damage Tolerance,
- Finite Element Analysis,
- Structural Stability.

#### Elective:

- Aeroelasticity,
- Aircraft Aerodynamics,
- Aircraft Performance,
- Aircraft Power Plant Installation,
- Aircraft Stability and Control,
- Computer Aided Design (CAD),
- Design for Manufacture and Operation,
- Design of Airframe Systems,
- Detail Stressing,
- Flight Experience,
- Initial Aircraft Design,
- Landing Gear Design,
- Loading Actions,
- Reliability, Safety Assessment and Certification,
- Structural Dynamics.

#### Duration:

MSc: Full-time - one year.

#### Start date:

October.

#### 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-in-structural-design](http://www.cranfield.ac.uk/courses/taught/avd-option-in-structural-design)