



# 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 fracture (damage tolerance) and fundamentals of aerodynamics and loading. Also covered is the suitable selection of suitable materials, both metallic and composite.

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 Structural Design option consists of nine compulsory modules and twelve elective modules. You are also required to complete a group design project and an individual research project.

A unique feature of the course is that we have four external examiners, two from industry who assess the group design project and two from academia who assess the 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, and takes place from January to September. It is often associated with a real-world problem that one of our industry partners are looking to resolve.

### 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

This MSc 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 Airbus, BAE Systems, Dassault and Rolls-Royce.

### Example modules

#### Compulsory:

- Design and Analysis of Composite Structures,
- Design for Manufacture and Operation,
- Detail Stressing,
- Fatigue, Fracture Mechanics and Damage Tolerance,
- Finite Element Analysis,
- Structural Stability,
- Initial Aircraft Design,
- Loading Actions,
- Reliability, Safety Assessment and Certification.

#### Elective:

- Aeroelasticity,
- Aerospace System Development and Life Cycle Model,
- 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,
- Flight Experience,
- Integrated Vehicle Health Management,
- Landing Gear Design.

#### 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.

### Contact details

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For further information please visit

[www.cranfield.ac.uk/StructuralDesign](http://www.cranfield.ac.uk/StructuralDesign)