Aerospace Computational Engineering

MSc/ PgDip/ PgCert

This unique course covers a wide range of applications focused on aerospace computational aspects. As mirrored by developments in the motorsport industry, within the next five years there will be a demand for engineers and leaders who will be using 100% digital techniques for aeronautical design and testing.

This course aims to enhance your skills through a detailed introduction to the state-of-the-art computational methods and their applications for digital age aerospace engineering applications. Focusing on fully integrated digital design for aerospace applications you will be able to understand and implement numerical methods on various computing platforms for aerospace applications.

Course structure

The taught modules are delivered from October to April via a combination of structured lectures, and computer based labs. Students on the part-time programme complete all of the compulsory modules based on a flexible schedule that will be agreed with the course director.

Individual project

The taught element of the course finishes in May. From May to September you will work full-time on your individual research project. The research project gives you the opportunity to produce a detailed piece of work either in close collaboration with industry, or on a particular topic which you are passionate about.

Group project

The Group project is related to wide range of aerospace applications including a unique digital wind tunnel development. Projects are available for a) full-aircraft simulations and development of advanced turbulence models, b) structural analysis, c) fluid-structure interaction, d) coupling these aforementioned computational methods including an integrated digital design, e) advanced visualisation techniques and f) the next generation of computational methods relevant to the aerospace industry.

Future career

Designed to equip you with the skills required to pursue a successful career working in the UK and overseas in computational aeronautic design and engineering. Our courses attract enquiries from companies in the rapidly expanding engineering IT industry sector across the world who wish to recruit high quality graduates who have strong technical programming skills in industry standard languages and tools. They are in demand by CAD vendors, commercial engineering software developers, aerospace, automotive and other industries and research organisations, and have been particularly successful in finding employment.

Example modules

The taught modules are delivered via a combination of structured lectures, and computer based labs.

Compulsory:

- Analysis and Visualisation of Big Data System and High Performance Computing,
- C++ Programming,
- Computational Engineering Structures,
- Computational Methods,
- Modelling Approaches for Aerospace Applications,
- Numerical Modelling for Compressible Flows,
- Numerical Modelling for Incompressible Flows,
- Validation and Verification for Aerospace Applications.

Duration:
MSc: Full-time - one year, part-time - up to three years.

Start date:
September.

Location:
Cranfield Campus.

Entry requirements:
Applicants are required to either have a minimum of a first or second class UK Honours degree or equivalent in mathematics, physics, computer science or an engineering discipline, or those with relevant industrial experience such as qualified engineers working with computational methods wishing to extend their knowledge.

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

Contact details

T: +44 (0)1234 758083
E: studyaerospace@cranfield.ac.uk

For further information please visit
www.cranfield.ac.uk/aerocompeng