Astronautics and Space Engineering

MSc

The space sector contributes more than £13.7bn per annum to the UK economy alone, and space activity across Europe and the world continues to thrive. There is a continuing need for talented employees with a good understanding of spacecraft systems engineering, coupled with a broad range of technical skills. Evolving constantly since 1987, this course has prepared graduates for highly successful careers in the space sector. Suitable for graduates in engineering, physics or mathematics, this course will prepare you for a career in this exciting field, from earth observation to planetary exploration, launch vehicles to spacecraft operations, and much more.

Course structure

The course consists of compulsory modules, elective modules, a group design project and an individual research project. The taught programme for the Astronautics and Space Engineering masters is generally delivered from October to September. A range of core modules allows you to gain a firm grounding in space engineering before opting for specialist modules to build your knowledge in a certain area.

Individual project

The individual research project is the largest single component of the course typically taking place between April and August. It allows you to develop specialist skills in an area of your choice by taking the theory from the taught modules and joining it with practical experience. A list of suggested topics is provided, and includes projects proposed by academic staff and industry.

Group project

This is a space mission design study conducted in teams of 10-15 students. It typically takes place from September to April and is assessed by written reports and presentations. It emphasises space systems engineering methodologies, and is designed to prepare our graduates for the project-based working environment often found in space companies and agencies. The topics chosen for the project are strongly influenced by industry.

Future career

Cranfield University is heavily supported by the space industry in the UK. Many of these companies provide case study lectures, concepts and thesis topics for the individual research projects, and some actively support the group design projects. They also provide a guide to the content of the course, so they are confident that Cranfield are training people with the industry skills employers require.

As a result, our graduates are regularly recruited by organisations including EADS Astrium, SSTL, Vega, ABSL, Tessella, OHB, Rutherford Appleton Laboratory and the European Space Agency in roles including Systems Engineer, Spacecraft Operations Engineer, Thermal Analyst and Space Robotics Engineer. We arrange company visits and interview days with key employers.

If your interests lie in research, many former students have gone on to pursue PhDs at Cranfield and other universities.

Example modules

The taught element is a mixture of assessed, non-assessed, compulsory and elective modules.

Compulsory:
- Astrodynamics and Mission Analysis,
- Space Communications,
- Space Systems Engineering,
- Space Propulsion.

Elective:
- Advanced Topics in Astrodynamics and Trajectory Design,
- Aerospace Navigation and Sensors,
- Control Systems,
- Design and Analysis of Composite Structures,
- Finite Element Analysis,
- Multivariable Control Systems for Aerospace Applications,
- Spacecraft Attitude Dynamics and Control.

Duration:
One year full-time, two-five years part-time (by extended thesis).

Start date:
October.

Location:
Cranfield Campus.

Entry requirements:
A first or second class UK Honours degree or equivalent, in mathematics, physics or an engineering discipline. Generally, our intake has both a physics and engineering background. Students from other sciences, mathematics, or computing backgrounds are welcome to apply and we will consider applications on a case by case basis.

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

T: +44 (0)1234 758083

E: studyaerospace@cranfield.ac.uk

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