Postgraduate master’s courses in Aerospace

Academic year 2023/24 entry
Cranfield University

We are the UK’s only specialist postgraduate university in technology and management, with longstanding relationships with some of the most prestigious global companies. Our close collaboration with industry, and passion for the areas we operate in, will help your career.

As we are postgraduate only, we are not listed in league tables that help compare undergraduate universities, such as The Times World Rankings and The Complete University Guide.

“"My experience at Cranfield has been extremely positive and exceeded my expectations. I delivered an interesting group design project working with Airbus on advanced Finite Element simulation techniques for aircraft design, applying the knowledge and competencies I acquired during classes and workshops in a real work environment. My individual research project focused on the design and analysis of novel mechanical metamaterials resulted in my first publication in a top scientific journal."

Guglielmo Cimolai, Simulation Process and Data Management (SPDM) Consultant, Airbus Helicopters, (Advanced Lightweight and Composite Structures MSc 2021)

Reasons to study Aerospace with us

1. **Aerospace Integration Research Centre**
   - Co-funded by Airbus, Rolls-Royce and the Higher Education Funding Council for England, this £35 million collaboration between industry and academia is developing the breakthrough solutions that will radically change the design of aircraft in the future.

2. **Specialist technical facilities**
   - In addition to our runway, global research airport, wind tunnels and flight simulators, our newest research facility, the £67 million Digital Aviation Research and Technology Centre (DARTeC) addresses the challenges and opportunities in the digital aviation technology field.

3. **From concept to flight**
   - Our industry-scale production and testing capabilities ensure that our ground-breaking, research-generated design concepts can be taken from the drawing board to the runway.

4. **Global contribution**
   - Our work embraces the entire spectrum of aviation, combining academic excellence and strong industry focus. We work with leading businesses, including Airbus, BAE Systems, Boeing, Rolls-Royce and Thales directly contributing to the economic growth of the global aerospace sector.

5. **Centre of aerospace excellence**
   - We are the UK’s top destination for aerospace engineering postgraduate students and the largest provider of accredited aerospace degree courses.

6. **Career development**
   - Our alumni go on to enjoy successful careers in aerospace, space and associated industries. Many senior employees in global aerospace organisations around the world have a connection to Cranfield, as former students, researchers or through our professional development programmes.
Course structure

Our specialist, sector-facing master’s courses are set up and developed in close collaboration with industry partners, ensuring the content of our courses remain industry-relevant and employers remain impressed with your business-readiness.

This diagram illustrates the typical course structure of many of our full-time master’s courses. Please check your course structure online for more detailed information, including the weight of each phase and part-time course structure variations.

Industry-sponsored group projects

The group project provides you with invaluable experience of delivering a collaborative piece of work in a team environment. With the assistance of industry, group projects are designed to mimic typical working environments within the sector.

The following courses include a group project:
• Advanced Lightweight and Composite Structures MSc,
• Advanced Air Mobility Systems MSc,
• Aerospace Computational Engineering MSc,
• Aerospace Dynamics MSc,
• Aerospace Vehicle Design MSc,
• Aircraft Engineering MSc,
• Applied Artificial Intelligence MSc,
• Astronautics and Space Engineering MSc,
• Autonomous Vehicle Dynamics and Control MSc,
• Aviation Digital Technology Management MSc,
• Computational and Software Techniques in Engineering MSc,
• Robotics MSc.

2021/2022 example projects:
• Astronautics and Space Engineering MSc: Space mission design study. Students worked together in teams of 10 - 15 on a study which emphasised space systems engineering methodologies. Projects are strongly influenced by industry and have included:
  - Debris removal and on-orbit maintenance mission,
  - Recoverable booster demonstrator for small satellite launcher,
  - Reusable orbital transfer vehicle.
• Robotics MSc: Smart cities robotics. Student teams developed three robotic technology demonstrators; robot receptionist, robot room service and robot waiter. These professional service robots were based at Stadium MK to enhance their customer service and resource management.

An intensive learning experience, providing the knowledge you need to excel in your specialist field.

The ability to understand how your part of a project affects the whole, giving you a head start for the world of work.

An opportunity to think and work in an original way.

For example, this could be working on a project for a University partner, delving deeper into an area of specific interest or a real-world challenge in the sector you want to work in.
Cranfield University is at the forefront of the global aerospace technology industry and has provided world-class postgraduate education and training for over 75 years. Together with our partner company, Cranfield Aerospace Solutions Ltd who are based at the heart of our campus, we have the unique capability and approvals to design, build and fly innovative aircraft systems.

The courses described in this brochure are a perfect illustration of the breadth and depth of our aerospace portfolio, providing you with skills and expertise valued around the world. Within a number of courses there is a range of options to suit individual interests.

Modules typically form 40% of the course content, with the group and individual projects making up the other 60%. See page 4 for the course structure and page 5 for which courses include a group project.

This brochure shows the compulsory and (where applicable) some elective modules offered in the 2020-2021 academic year, to give you an idea of course content. To keep our courses relevant and up-to-date, modules are subject to change so please check the latest information on our website.

### Advanced Lightweight and Composite Structures
www.cranfield.ac.uk/LWCompStructures • Accredited, see page 16
October intake

No other course provides such dedicated specialist training in the design and analysis of advanced lightweight and composite structures in aerospace, automotive, marine and renewable energy industries. Delivered with a unique focus on industry challenges and concerns, this course will equip you with strong experimental, numerical and analytical skills in structural mechanics for both composite and metallic components. You will be able to practically apply this knowledge to solve real engineering problems.

**Compulsory modules**
- Advanced Composite Analysis and Impact,
- Advanced Simulation for Impact,
- Crashworthiness,
- Finite Element Methods,
- Introduction to Continuum Mechanics,
- Materials Characterisation and Failure Simulations,
- Structural Stability,
- Thin-walled Structures.

### Aerospace Computational Engineering
www.cranfield.ac.uk/AeroCompEng • September intake

This course blends skills-based and subject-specific material to provide you with practical skills and cutting-edge knowledge adaptable to a wide variety of applications in aerospace computational engineering. Also suitable for qualified engineers to incorporate CFD into their skill-set.

**Compulsory modules**
- 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.

### Aerospace Dynamics
www.cranfield.ac.uk/Aerodynamics • Accredited, see page 16
October intake

This course provides both fundamental and applied knowledge to understand airflows, vehicle dynamics and control and methods for computational modelling. It provides you with practical experience in the measurement, analysis, modelling and simulation of airflows and aerial vehicles.

There are two specialist streams available within the course:

- **Aerodynamics** - for those interested in flow physics, experimental aerodynamics, aerodynamic modelling and simulation and flow control techniques.
- **Flight Dynamics** - which covers aircraft stability, control, simulation and modelling.

**Compulsory modules (for both streams)**
- Flight Experimental Methods,
- Individual Research project.

**Elective modules (choose a minimum of eight electives)**
- Aerospace Navigation and Sensors,
- Air Vehicle Modelling and Simulation,
- CFD for Aerospace,
- Compressible Flows,
- Control Systems,
- Experimental Aerodynamics,
- Flight Dynamics Principles,
- Flying Qualities and Flight Control,
- Fundamentals of Aircraft System Identification,
- Fundamentals of Rotorcraft Performance,
- Stability and Control,
- Introduction to CFD,
- Launch and Re-entry Aerodynamics,
- Modelling of Dynamic Systems,
- Multivariable Control Systems for Aerospace Applications,
- Transonic Aerodynamic Design,
- Viscous Flow and Environmental Impact.
Aerospace Vehicle Design
www.cranfield.ac.uk/AerospaceVehicleDesign  •  Accredited, see page 16
October and March intakes

This MSc focuses on the technical, business and management aspects of aircraft design and development. This world-leading programme will build your knowledge of the design of flying vehicles such as aircraft, missiles, airships and spacecraft and prepare you for an exciting career. There are three specialist options available:

• Aircraft Design – a comprehensive overview of aircraft performance, structures and systems.
• Avionics Systems Design – understand the design of avionic systems, analysis, development, test and airframe integration.
• Structural Design (October intake only) – covers aircraft structures, airworthiness requirements, design standards, stress analysis, fatigue and fracture and fundamentals of aerodynamics and loading.

### Modules:

<table>
<thead>
<tr>
<th>Module</th>
<th>Aircraft Design</th>
<th>Avionics Systems Design</th>
<th>Structural Design</th>
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</thead>
<tbody>
<tr>
<td>Aerelasticity</td>
<td>Elective</td>
<td></td>
<td>Elective</td>
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<tr>
<td>Aeronautical Communication Systems</td>
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<td>Aerospace Software Engineering and Ada</td>
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<tr>
<td>Aerospace System Development and Life Cycle Model</td>
<td>Elective</td>
<td>Elective</td>
<td>Elective</td>
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<tr>
<td>Aircraft Aerodynamics</td>
<td>Elective</td>
<td>Elective</td>
<td>Elective</td>
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<tr>
<td>Aircraft Performance</td>
<td>✓</td>
<td></td>
<td>Elective</td>
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<tr>
<td>Aircraft Power Plant Installation</td>
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<td></td>
<td>Elective</td>
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<tr>
<td>Aircraft Stability and Control</td>
<td>✓</td>
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<td>Elective</td>
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<tr>
<td>Avionics Air Traffic Control</td>
<td>✓</td>
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<tr>
<td>Avionics Data Networking, Hardware Integration and Testing</td>
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<tr>
<td>Cockpit Environment</td>
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<tr>
<td>Computer Aided Design (CAD)</td>
<td>Elective</td>
<td>Elective</td>
<td>Elective</td>
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<tr>
<td>Control Systems</td>
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<tr>
<td>Design and Analysis of Composite Structures</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Design for Manufacture and Operation</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Design of Airframe Systems</td>
<td>✓</td>
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<td>✓</td>
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<tr>
<td>Detail Stressing</td>
<td>Elective</td>
<td></td>
<td>✓</td>
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<tr>
<td>Fatigue, Fracture Mechanics and Damage Tolerance</td>
<td>Elective</td>
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<tr>
<td>Fault Tolerant Avionics Design</td>
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<tr>
<td>Finite Element Analysis</td>
<td>Elective</td>
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<tr>
<td>Flight Experience</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Inertial and Satellite Navigation Systems</td>
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<tr>
<td>Initial Aircraft Design</td>
<td>✓</td>
<td>Elective</td>
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<tr>
<td>Integrated Navigation Systems</td>
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<tr>
<td>Integrated Vehicle Health Management</td>
<td>Elective</td>
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<tr>
<td>Landing Gear Design</td>
<td>Elective</td>
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<tr>
<td>Loading Actions</td>
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<tr>
<td>Modelling of Dynamic Systems</td>
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<td>✓</td>
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<td>Radio Systems</td>
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<td>✓</td>
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<tr>
<td>Reliability, Safety Assessment and Certification</td>
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<td>✓</td>
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<tr>
<td>Structural Stability</td>
<td></td>
<td>✓</td>
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</table>

**Notes:**
1. To successfully complete the MSc, certain modules are compulsory and hence marked accordingly.
2. You will be required to select some elective modules to meet the total number of teaching hours for the course. These will allow you to customise your studies and aid in your group project and individual thesis. They do not count as credits towards your final mark.

### Computational and Software Techniques in Engineering

www.cranfield.ac.uk/CompSWTechEng  •  September intake

Engineering software development is one of the key areas in the information technology sector. This course equips you with the hands-on skills and up-to-date knowledge adaptable to a wide variety of applications. You can specialise in:

• **Computational Engineering Design** - provides the skills necessary to develop and use core CAD and CAE solution software in diverse industrial settings.
• **Computational Intelligence for Data Analytics** - focuses on the fundamentals of computationally intelligent data handling algorithms and their application in disciplines needing fast and automated decision-making.
• **Computer and Machine Vision** - focuses on aerial and robotic vision-based systems and the theory and application of signal processing and computer vision algorithms.
• **Software Engineering for Technical Computing** - provides a unique insight into the development of computer applications across modern computing environments.

### Modules:

<table>
<thead>
<tr>
<th>Module</th>
<th>Computational Engineering Design</th>
<th>Computational Intelligence for Data Analytics</th>
<th>Computer and Machine Vision</th>
<th>Software Engineering for Technical Computing</th>
</tr>
</thead>
<tbody>
<tr>
<td>C++ Programming</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Management for Technology</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Computational Methods</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Computer Vision</td>
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<tr>
<td>Machine Learning (for Computer Vision)</td>
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<tr>
<td>Requirements Analysis and System Design</td>
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<tr>
<td>Software Testing and Quality Assurance</td>
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<tr>
<td>Small-Scale Parallel Programming</td>
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<tr>
<td>Cloud Computing</td>
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<tr>
<td>High Performance Technical Computing</td>
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<tr>
<td>Advanced Java and Advanced Python</td>
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<tr>
<td>Machine Learning and Big Data</td>
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<tr>
<td>Artificial Intelligence</td>
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<tr>
<td>Internet of Things</td>
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Digital Aviation Research and Technology Centre
Aircraft Engineering
www.cranfield.ac.uk/AircraftEng • Accredited, see page 16
February intake

This course is specifically designed for people working in engineering or technical management positions in the aerospace industry who wish to study for an accredited master’s degree while they are in employment. This course will broaden your understanding of aircraft engineering and design subjects and provide you with a strong foundation for career development in technical, integration and leadership roles.

Compulsory modules
• Initial Aerospace Vehicle Design,
• Major Component Design and Manufacture,
• Manufacturing,
• Methodologies for Integrated Product Development,
• Tools for Integrated Product Development.

Elective modules (choose two electives)
• Aircraft Loading Actions and Aeroelasticity,
• Aircraft Performance for Aircraft Engineering,
• Design and Development of Airframe Systems,
• Design, Durability and Integrity of Composite Aircraft Structures,
• Detail Stressing,
• Fatigue, Fracture Mechanics and Damage Tolerance,
• Finite Element Analysis,
• Flight Dynamics Principles for Aircraft Engineering,
• Introduction to Aircraft Structural Crashworthiness,
• Introduction to Autonomous Systems,
• Introduction to Avionics,
• Through-life System Effectiveness.

Applied Artificial Intelligence
www.cranfield.ac.uk/AAI • October intake
MSc
Full- or part-time

Artificial Intelligence (AI) technologies are being increasingly adopted across a broad range of industries, creating demand for talented graduates who can help realise the transformative potential. Be at the forefront of this revolution, by gaining a unique combination of theoretical and practical skills enabling you to work across disciplines and implement AI systems where they are needed.

Compulsory modules
• Data Analytics and Visualisation,
• Deep Learning,
• Ethical, Regulatory and Social Aspects of AI,
• Intelligent Cyber Physical Systems,
• Logic and Automated Reasoning,
• Search and Optimisation,
• Statistical Learning Methods,
• Systems Engineering.

Astronautics and Space Engineering
www.cranfield.ac.uk/AstroSpaceEng • Accredited, see page 16
October intake
MSc
Full-time

Space activity continues to grow globally, with international efforts under way to return humans to the Moon, and ambitious plans within the UK to play a leading role in the new space age, including support for a domestic satellite launch capability. There is a continuing need for talented employees with a good understanding of spacecraft systems engineering, coupled with a broad range of technical skills. Suitable for engineering, physics or mathematics graduates, this course will prepare you for a wide variety of roles, from earth observation to planetary exploration and launch vehicles to spacecraft operations.

Compulsory modules
• Astrodynamics and Mission Analysis,
• Space Propulsion,
• Space Systems Engineering.

Elective modules (choose two electives)
• Advanced Composite Analysis and Impact,
• Aerospace Navigation and Sensors,
• Finite Element Methods,
• Guidance Navigation and Control of Space Systems,
• Mathematics and Programming for Astrodynamics and Trajectory Design,
• Space Communications,
• Spacecraft Attitude Dynamics and Control.

"One of the things that attracted me to study Cranfield University was its remarkable history in aerospace development and research. Joining Cranfield University was a challenge at the same time as being an unbelievable opportunity to develop both my engineering and personal skills. The course is well organised, as the theoretical concepts learned throughout the modules are then applied during practical sessions."

Enara Martin Garro, Artificial Intelligence Engineer, Promedico,
(Computational and Software Techniques in Engineering MSc 2021)
Autonomous Vehicle Dynamics and Control

www.cranfield.ac.uk/AutonomousVehicleDC • October intake

The global market for aerial, ground, and marine autonomous vehicles has grown rapidly due to the advent of drones and driverless cars. The Autonomous Vehicle Dynamics and Control MSc is a unique course for engineering, physics, or mathematics graduates. You will gain lasting and transferable skills in key aspects of autonomy to differentiate yourself in today’s competitive market. Career opportunities include the security, defence, marine, environmental, automotive and aerospace industries.

Compulsory modules
• Artificial Intelligence for Autonomous Systems,
• Autonomous Vehicle Control Systems,
• Guidance and Navigation for Unmanned Aircraft Systems (UAS),
• Introduction to UAS,
• Logic and Automated Reasoning,
• Sensor Fusion,
• UAS Dynamics and Control,
• UAS Modelling and Simulation.

Aviation Digital Technology Management

www.cranfield.ac.uk/ADTM • October intake

This MSc aims to develop professionals to innovate and apply digital technology in the aerospace context. It adds the digital component to aeronautical engineering and expands from the design and manufacture focis of established aeronautical engineering programmes to the wider aviation industry opportunities. It can be joined as a route for non-aeronautical engineering and computing graduates who aspire to enter the aviation industry. In addition, this course is a career development path for aerospace industry professionals to boost their digital and innovation skills.

Compulsory modules
• Aerospace Inspection and Monitoring Tools,
• Aviation Digitalisation,
• Communications and Cybersecurity in Aviation,
• Data-centric Aircraft Systems,
• Digital Aviation Operations and Maintenance Management,
• Digital Aviation Supply Chain Management,
• Digital Engineering,
• Predictive Maintenance Technology.

Computational Fluid Dynamics

www.cranfield.ac.uk/CompFluidDynamics • Accredited, see page 16 • October intake

This course enables you to understand, develop and implement CFD across a range of industries. You will learn how to code and implement numerical schemes to solve fluid dynamics problems, and how to apply CFD using commercial and open-source CFD software, tackling turbomachinery and rotorcraft aerodynamics, multi-phase flow and heat transfer, microflows, fluid-structure interaction, environmental flows. The group project simulates a CFD consultancy environment, where you will solve industrial problems across aerospace, automotive or energy sectors.

Compulsory modules
• Data Analysis and Uncertainty,
• Grid Generation/CAD,
• Introduction to Fluid Mechanics and Heat Transfer,
• Numerical Methods and High Performance Computing,
• Numerical Modelling for Compressible Flows,
• Numerical Modelling for Incompressible Flows,
• The Role of Experimental Data in CFD,
• Turbulence Modelling.

Pre-master’s in Engineering

www.cranfield.ac.uk/Premasters • October intake

This programme provides an ideal entry route into an engineering MSc. It is suitable for those who do not meet the minimum entry requirements or for those who have been out of education for some time. It is an intensive full-time course delivered through a combination of taught modules (lectures, practical laboratory sessions, assignments) and an individual research project covering engineering principles relating to fields of engineering across the aerospace, automotive, offshore, and energy sectors.

Compulsory modules
• Aeronautical Engineering,
• An Introduction to Engineering Materials and Failure Analysis,
• Basic Aerodynamics,
• Computing Aided Design (CATIA),
• Computing Course,
• Engineering Stress Analysis,
• Mathematics I and II,
• Mechanical Design,
• Propulsion and Power,
• Research Methods,
• Thermofluids.

Robotics

www.cranfield.ac.uk/Robotics • Accredited, see page 16 • October intake

As the demand for robotics is increasing, this course has been developed to equip you with the skills and knowledge to become a robotics engineer. It is unique in its focus on human aspects supported by practical applications. This course is suitable for those with basic engineering mathematics knowledge and computer programming skills.

Compulsory modules
• Artificial Intelligence and Machine Learning for Robotics,
• Autonomy in Robotic Systems,
• Fundamentals of Robotics,
• Human-Robot Interaction,
• Machine Vision for Robotics,
• Programming Methods for Robotics,
• Psychology, Ethics and Standards,
• Robotics Control.

National Flying Laboratory (a custom-fitted Saab 340B).
This course provides the skills required for a challenging career in the field of propulsion and power, where our graduates are making a vast contribution to the international gas turbine industry. You will gain fundamental and applied knowledge on the design, operation and maintenance of gas turbine engines for air, sea and land applications.

You will be expected to earn a total of 200 credits on the program, of which 100 credits will be earned from the taught modules and an additional 100 credits by undertaking the individual research project. The four options address different requirements and market sectors. The MSc consists of 50% project work which benefits from the extensive research and development activities within the Centre for Propulsion Engineering. Projects have been carried out alongside BP, Clean Sky, easyJet, ITP Aero, Lufthansa Technik, Rolls-Royce, Royal Military of Canada, Shell, the Aerospace Engineering Corporation of China (AVIC) and many other key organisations.

The available options are:

- **Aerospace Propulsion (AP)** – for those seeking a career in the design, development, operation and maintenance of propulsion systems.
- **Gas Turbine Technology (GTT)** – examines the increasing application in power generation, oil and gas pumping, chemical processing and power plants for ships and other large vehicles.
- **Marine Propulsion Technology (MPT)** – develop skills in the design, development, operation and maintenance of marine propulsion systems.
- **Power, Propulsion and the Environment (PPE)** – prepares you with a thorough knowledge of, and the ability to, assess anthropogenic emissions.
- **Rotating Machinery, Engineering and Management (RMEM)** – provides you with design and operational skills for rotating equipment in aeronautical, marine, oil, power and process industries, and other surface applications.

<table>
<thead>
<tr>
<th>√ = compulsory module</th>
<th>AP</th>
<th>GTT</th>
<th>MPT</th>
<th>PPE</th>
<th>RMEM</th>
</tr>
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<tbody>
<tr>
<td>Modules: E = Elective module</td>
<td>AO</td>
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**Combustors**

**Engine Systems**

**Gas Turbine Performance Simulation and Diagnostics**

**Turbomachinery and Blade Cooling**

**Mechanical Design of Turbomachinery**

**Gas Turbine Operations and Rotating Machines**

**Management for Technology**

**Computational Fluid Dynamics for Gas Turbines**

**Propulsion Systems Performance and Integration**

**Jet Engine Control**

**Marine Propulsion Systems Integration**

**Space Propulsion**

**Propulsion Electrification**

Notes:
1. To successfully complete the MSc, certain modules are compulsory and hence marked accordingly.
2. For the options Aerospace Propulsion and Rotating Machinery, Engineering and Management the credits from mandatory modules total to 100.
3. For the options Gas Turbine Technology and Power, Propulsion and Environment the credits from mandatory modules total to 90 and to achieve 100 credits from the taught modules, an elective (10 credits) has to be selected and completed from the options available.
4. All non-compulsory modules may be attended, timetable dependent, regardless of option choice.
5. Visit the course webpage for further details.

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**Selected aerospace MSc courses are provided with the opportunity to experience a flight in our National Flying Laboratory Centre’s (NFLC) light aircraft.**

This flight experience will complement your MSc studies and inspire your aeronautical career. During the flight you will have the opportunity to take control of the aircraft.

Each experience is three hours in duration and includes a pre-flight safety briefing outlining the details of the manoeuvres to be flown, a flight of approximately one hour, and a post-flight debrief to discuss aspects of the flight with the instructor and to provide the opportunity to ask further questions. The following courses offer this experience:

- **Aerospace Dynamics MSc,**
- **Aerospace Vehicle Design MSc,**
- **Astronautics and Space Engineering MSc,**
- **Safety and Human Factors in Aviation MSc** (see separate brochure).
Accreditation

Some of our courses are accredited by one or more Professional Engineering Institutions (PEIs) on behalf of the Engineering Council as meeting the requirements for further learning for registration as a Chartered Engineer.

Candidates must hold a CEng accredited BEng/BSc (Hons) undergraduate first degree to comply with full CEng registration requirements.

You can check the accreditation status of this or any other degree programme at www.engc.org.uk/acad or visit the course webpage for further details.

Key facts and statistics

Course information

- **Full-time**
  - One year

- **Part-time**
  - Up to three years
  - See the course page for more information about part-time study.

- **Start date**
  - Various
  - See individual course for details.

- **MSc/PgDip/PgCert**
  - Not all courses offer all awards, see course information for details of awards offered.

- **Fees**
  - Please see the individual course pages on our website for full fee information and full-time or part-time options. Terms and conditions apply.

Cohort profile*

- **Geographic spread**
  - 21% UK
  - 79% Rest of world

- **Countries**
  - 67

- **Average cohort age**
  - 19-29 years

- **Average cohort size**
  - 20-40

- **Fees**
  - Please see the individual course pages on our website for full fee information and full-time or part-time options. Terms and conditions apply.

- **Part-time**
  - Up to three years
  - See the course page for more information about part-time study.

- **Start date**
  - Various
  - See individual course for details.

- **MSc/PgDip/PgCert**
  - Not all courses offer all awards, see course information for details of awards offered.

- **Fees**
  - Please see the individual course pages on our website for full fee information and full-time or part-time options. Terms and conditions apply.

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*These figures give an indication of the course make-up at registration across our Aerospace programme for the entry year 2021-2022.

“Cranfield University’s connection to industry further rekindled my drive to make an impact as students have numerous opportunities awaiting them even before graduating. The group design project is an important part of the master’s at Cranfield and it positively enhanced my teamwork, time management and presentation skills. Our project - UAV (Unmanned Aerial Vehicle) SWARM Challenge - was sponsored by BAE Systems. Cranfield is a formidable institution contributing to local, national and international development and I am proud to be associated with it.”

Rabiyat Ajibola Usman,
(Appplied Artificial Intelligence MSc, 2020)
Industry links

Cranfield has unrivalled links with industry. Our students benefit from our extensive contacts and track record of close collaboration with Government and the aerospace sector. These links include industrial advisory panels and project sponsors.

Industrial advisory panel

Our courses are reviewed each year by a panel of industry experts to ensure that students graduate from Cranfield with the appropriate knowledge and skills to become future leaders in the industry.

Some of the companies represented on our aerospace courses industrial advisory panel include:

Airbus, BAE Systems, Thales.

Project sponsors

The group and individual projects that you will take as part of your course are often run in collaboration with our industrial partners.

More information about group projects can be seen on page 5 and some of our partners are shown on the back cover of this brochure.

“Boeing’s long-standing partnership with Cranfield University includes a range of projects across aviation, aeronautics and aircraft development. It is testament to our strong ties that many Boeing employees study at the university, gaining the technical skills and experience to become industry leaders. As a Cranfield graduate myself, I feel equipped with the confidence, skillset and knowledge to develop my career and achieve my end goals.”

Gary Gardner, Engineering Career Foundation Program, Boeing UK

Careers

Our multidisciplinary approach, marrying aeronautical engineering, materials and manufacturing excellence with aviation business processes, practices and management, gives our graduates notable breadth and depth of expertise. It is this combination of technical excellence and real-world business and commercial appreciation that gives our graduates a unique identity and value in the marketplace.

Graduates go on to forge careers in the aerospace, energy, automotive, space and defence sectors. Here are some examples of the type of roles our graduates have gone on to, and the organisations they work for:

Roles:
- Aerospace Engineer,
- Computational Fluid Dynamics Engineer,
- Consultant Engineer,
- Design Engineer,
- Flight Test Engineer,
- Mechanical Engineer,
- Performance Engineer,
- Project Manager,
- Research and Development Engineer,
- Robotics Engineer,
- Senior Systems Engineer,
- Stress Engineer,
- Structural Integrity Engineer,
- Systems Engineer,
- Turbine Designer.

Organisations:
- Airbus,
- Alstom,
- Altran,
- Avanti Communications,
- BAE Systems,
- Boeing,
- Dassault Aviation,
- General Electric,
- GKN Aerospace,
- PETRONAS,
- Quest Global Engineering,
- Rolls-Royce,
- Safran,
- Siemens,
- Thales.

Aerospace Integration Research Centre (AIRC).

Open laboratory in AIRC.
Academic staff

You will be taught by a wide range of subject specialists from the University and industry professionals who draw on their research and industrial expertise to provide stimulating and relevant input to your learning experience. Here are just a few of our teaching staff:

Professor Karl Jenkins, Professor of Computational Engineering
Karl is Head of the Centre for Computational Engineering Sciences and is the Programme Director for the master's in Aerospace Computational Engineering, Computational and Software Techniques in Engineering and Computational Fluid Dynamics. He leads research activity in computational engineering with particular expertise in high-fidelity simulations and modelling. He contributes to the UK Consortium on Turbulent Reacting Flows and won the Gaydon prize in 2004.

Dr Jennifer Kingston, Senior Lecturer in Space Systems
Jennifer has been Course Director of the Astronautics and Space Engineering MSc since 2011. She previously worked for the European Space Agency and has been involved in multiple space missions, including working on three Cranfield payloads that are currently in orbit.

Professor Vassilios Pachidis, Head of the Centre for Propulsion and Thermal Power Engineering
Vassilios is also the Director of the Rolls-Royce University Technology Centre in Aero Systems Design, Integration and Performance, and the Head of the Air and Space Propulsion Institute. He has taught more than 700 postgraduate students and supervised over 165 MSc to completion. Published widely, he holds joint patents filed with Rolls-Royce.

Professor Antonios Tsourdos, Head of the Centre for Autonomous and Cyber-physical Systems
Antonios was appointed Head of the Centre for Autonomous and Cyber-physical Systems at Cranfield in 2007, Professor of Autonomous Systems in 2009 and Director of Aerospace Research in 2015. He leads the research on autonomous systems and has diverse expertise in both unmanned and autonomous vehicles as well as networked systems and space.

Financing your studies

If you need advice on funding your course or living costs, we can provide information and a range of online tools to help you put together the funding package you need.

There is more information on our website: www.cranfield.ac.uk/funding

How to apply

Read more about our entry requirements and how to apply online on our website.

www.cranfield.ac.uk/apply
Meet us

We look forward to meeting you at our Open Day, events or webinars at Cranfield, around the world or online.

www.cranfield.ac.uk/events

A welcoming, professional campus community

Located just over an hour from London in the English countryside, Cranfield’s campus environment supports close, working relationships between our multinational postgraduate students and academic and industry experts.

www.cranfield.ac.uk/visit

"With every day at Cranfield, the University always surprises me with its outstanding research facilities, the quality of the course and also the support I’ve received. From the flight engineer test research in the new Saab 340B aircraft, to the flying experience in Slingsby T67 Firefly, plus my thesis on Rolls Royce’s Future Systems Simulator, it has all enhanced my technical skillset and trained me at an industrial benchmark to start a progressive career in the Aerospace industry."

Jeet Makadia, Model Based Systems Engineer, Rolls-Royce on behalf of AL TEN, (Aerospace Dynamics MSc 2021)

Take a virtual tour of our Cranfield campus to see inside some of our facilities.

virtualexperience.cranfield.ac.uk
Cranfield University works with over 1,500 businesses and governments based in over 40 countries

These organisations include:

- AIRBUS
- BAE SYSTEMS
- BOEING
- EASA
- ROLLS-ROYCE
- SAFRAN
- THALES

Other courses you may also be interested in:

- Aerospace Manufacturing MSc
- Aerospace Materials MSc
- Airport Planning and Management MSc
- Air Transport Management MSc
- Airworthiness MSc
- Military Aerospace and Airworthiness MSc
- Safety and Human Factors in Aviation MSc

For a full list of Cranfield courses, please see our prospectus and website.

www.cranfield.ac.uk/aerospace

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Every effort is made to ensure that the information in this brochure is correct at the time it is printed. Please check our website for the latest information. SATM-A-September 2022.