



Postgraduate  
master's courses in

# **Safety, human factors and accident investigation**

**Academic year 2022/23 entry**

Airworthiness MSc/PgDip/PgCert  
Aviation Safety Management, Risk and Regulation MSc/PgDip/PgCert  
Safety and Accident Investigation MSc/PgDip/PgCert  
Safety and Human Factors in Aviation MSc/PgCert

# 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.

**Specialist postgraduate**

A research-focused professional community

**81%**

of our research is world-leading or internationally excellent

Research Excellence Framework (REF) 2014



THE QUEEN'S ANNIVERSARY PRIZES FOR HIGHER AND FURTHER EDUCATION 2019

**Six-time winner of the Queen's Anniversary Prize for Higher and Further Education**

**Over £150 million** of investment in new facilities over the past five years

A professional network of **70,000+** alumni, from 177 countries

**5,000+** postgraduate students from **100+ countries**

**UK Top 5 for Engineering** (Mechanical, Aeronautical and Manufacturing) QS World University Rankings by subject, 2021

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*.

"This is an intense course which gives you a solid understanding of the subject, and could launch a possible career in the safety, human factors and accident investigation field. One of its main strengths is the range and practical application of the modules, alongside the variety of students from different backgrounds, who are happy to support you along the path of the course."

**Zuzana Chin**, Safety and Accident Investigation Centre Mastership Manager, Cranfield University, (Safety and Human Factors in Aviation MSc 2018)



## Reasons to study **safety, human factors and accident investigation** with us

### 1 Heritage

We are an award-winning centre of excellence for aviation safety, human factors and transport accident investigation.

### 2 Industry links

Our close relationships with the UK air, rail and marine accident investigation branches, the military and overseas investigation agencies, airlines and other safety-critical organisations enable us to deliver courses that are taught by leading experts drawing on a wealth of experience.

### 3 World-class facilities

The University features its own airport, the National Flying Laboratory Centre (Saab 340B aircraft), Boeing 737-400, various flight simulators and accident investigation laboratory.

### 4 Flexible delivery

We recognise that the majority of students seek to further their careers or add additional skills and experience to their portfolio. Our courses are organised and resourced to provide flexible options to enable you to maximise limited study time.

### 5 Hands-on learning

We use hands-on workshops and simulations to bring our teaching to life. You will learn from experienced academics and industry professionals in an environment that prepares you for your new role as a safety professional.

### 6 Networking opportunities

Studying at Cranfield will bring you in close contact with leading safety professionals and practitioners from around the world, enabling you to develop valuable connections and potential career development opportunities.



Accident investigation simulation.



Accident investigation laboratory.

# Courses

This brochure shows the compulsory and (where applicable) some elective modules offered in the 2021-22 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.

All the courses below are offered part-time, except Safety and Human Factors in Aviation, which is available full-time only.

## Airworthiness

MSc, PgDip, PgCert

[www.cranfield.ac.uk/airworthiness](http://www.cranfield.ac.uk/airworthiness) • Accredited – see page 9

This course provides an academically recognised high standard of qualification in airworthiness, a fundamental part of aviation safety. Delivered through a series of highly-focused five-day modules, the course addresses the key aspects of design, production and maintenance of aircraft.

All modules are linked to the safety regulatory subject of airworthiness, alongside lectures tailored to the technology of each module/short course. The course content is appropriate for technical staff, including those from a regulatory authority.

## Aviation Safety Management, Risk and Regulation

MSc, PgDip, PgCert

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

This course has been developed in partnership with CAA International, the training and advisory services arm of the UK Civil Aviation Authority. You will gain a spectrum of technical knowledge in the context of safety, risk and regulation in aviation. It course will provide the regulatory background of all aspects of safety in operations, production and maintenance in the aviation industry. This course is also available as part of a Level 7 Risk and Safety Management Professional Apprenticeship Standard for eligible UK companies.

## Safety and Accident Investigation

MSc, PgDip, PgCert

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

Designed for accident investigators and safety professionals across a range of safety-critical sectors, this part-time course provides an internationally-recognised academic qualification in safety and accident investigation.

Based on a series of modules encompassing investigation techniques and safety management, the course is industry-focused and relevant to those seeking a career as a professional investigator in a government investigation agency, manufacturer, operator, infrastructure provider or regulator.

## Safety and Human Factors in Aviation

MSc, PgCert

[www.cranfield.ac.uk/SHFA](http://www.cranfield.ac.uk/SHFA) • Accredited – see page 9

Supporting the growing demand for experts in human factors and safety within aviation. This course combines the examination of human factors with the study of safety science and management.

Covering the factors contributing to human error, accidents and the skills to propose and evaluate safety improvements, this full-time qualification has a range of modules that add significant value in aviation and other safety-critical contexts related to human-system integration.

✓ = Compulsory module.

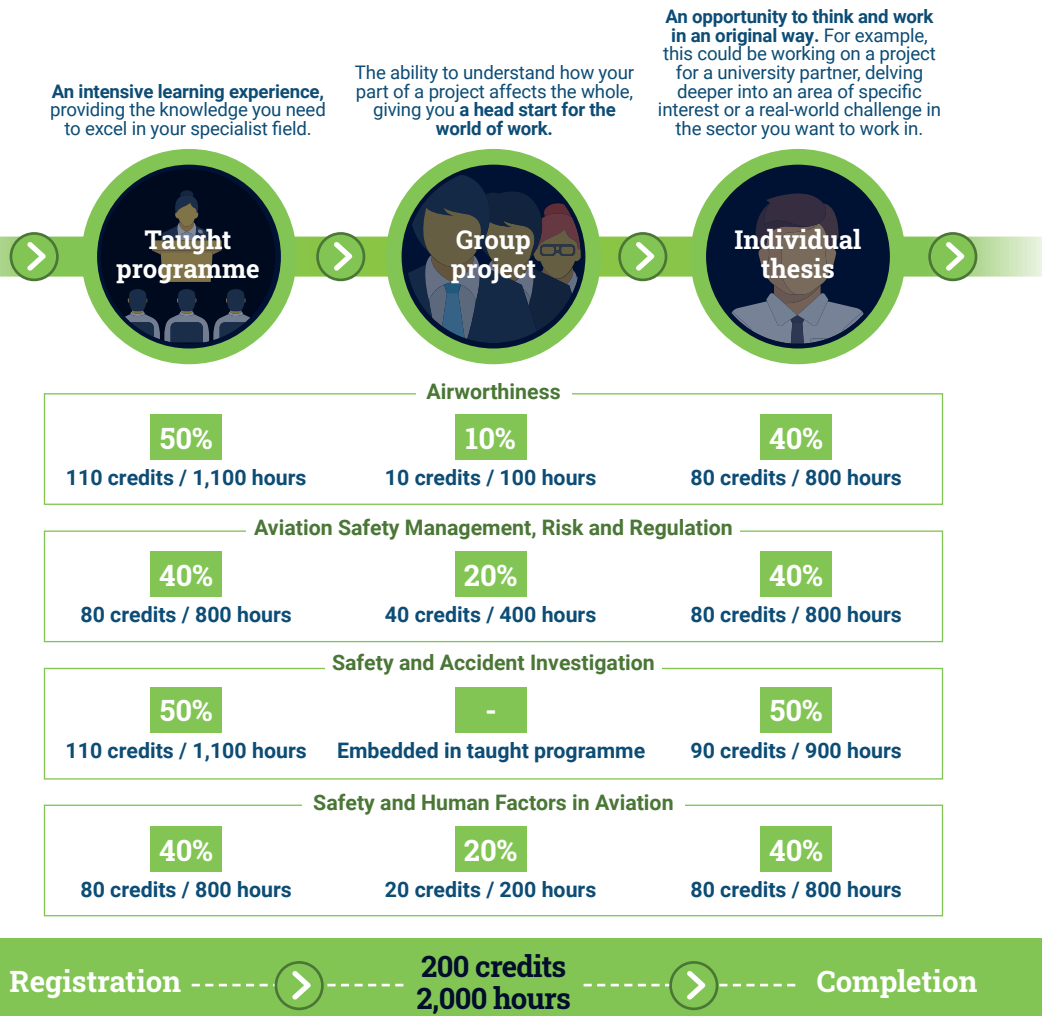
### Modules:

	Airworthiness	Aviation Safety Management, Risk and Regulation	Safety and Accident Investigation	Safety and Human Factors in Aviation
	Choose three elective modules		Choose three or more electives	Choose two elective modules
Advanced Safety and Risk Management		✓		
Air Transport Engineering - Maintenance Operations	✓			
Aircraft Accident Investigation and Response	Elective	✓		✓
Aircraft Fatigue and Damage Tolerance	✓			
Airframe Systems	✓			
Airworthiness Fundamentals	✓			
Analysis Techniques for Accident Investigators			Elective	
Applied Aircraft Accident Investigation			Elective	
Applied Marine Accident Investigation			Elective	
Applied Rail Accident Investigation			Elective	
Applied Safety Assessment				✓
Aviation Legislation and Regulatory Approach		✓		
Aviation Safety Management	✓		Elective	✓
Cognitive Ergonomics				✓
Crisis Management and Business Continuity			Elective	
Design, Durability and Integrity of Composite Aircraft Structures	Elective			
Detail Stressing	Elective			
Flight Data Monitoring			Elective	Elective
Flight Experimental Methods	Elective			
Fundamentals of Accident Investigation			✓	
Fundamentals of Aerodynamics	Elective			
Fundamentals of Aircraft Engine Controls	Elective			
Fundamentals of Material Failures for Accident Investigators			Elective	
Gas Turbine Fundamentals	✓			
Human Factors in Aviation Maintenance	Elective		Elective	Elective
Human Performance and Error				✓
Human-Computer Interaction in Aviation				✓
Interviewing Techniques for Accident Investigators			Elective	
Introduction to Aircraft Structural Crashworthiness	Elective		Elective	
Introduction to Avionics	Elective			
Investigating Human Performance			Elective	
Legal Skills for Accident Investigators			Elective	
Manufacturing	Elective			
Mechanical Integrity of Gas Turbines	Elective			
Practical Reliability	Elective			
Research Methods			✓	✓
Responding to Risk in Sociotechnical System		✓		
Safety Assessment of Aircraft Systems	✓		Elective	✓
Training and Simulation				Elective

# Course structure

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

This diagram illustrates the course structure of our 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 links

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

## Industrial advisory panel

Our courses are reviewed each year by a panel of industry advisers from leading companies and institutions in the sector. This ensures that the skills you acquire are up-to-date and what employers want. Some of the companies represented on our safety and accident investigation courses industrial advisory panel include: Rolls-Royce, Airbus, Boeing, Bristow Helicopters, NATS, TUI and UK rail, air and marine accident investigation branches.

## Project sponsors

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

Some of our partners are shown on the back cover of this brochure.

# Careers

Typically, our graduates work in the following types of roles in sectors such as:

### Roles:

- Accident Investigator,
- Airworthiness Inspector,
- Flight Data Specialist,
- Human Factors Specialist,
- Safety Engineer,
- Safety Manager,
- Safety Regulator.

### Sectors:

- Aerospace,
- Air transport,
- Energy,
- Marine,
- Military,
- Rail,
- Transport safety.

# Academic staff

You will be taught by a wide range of subject specialists at Cranfield and from industry, who draw on their research and industrial expertise to provide stimulating and relevant input to your learning experience.

The list of academics below represents a small proportion of our staff; we also have a large number of highly-experienced guest lecturers.



## Professor Graham Braithwaite, Director of Transport Systems

Graham Braithwaite is a Professor of Safety and Accident Investigation. He joined Cranfield in 2003 and established the world's first MSc programme for professional accident investigators. Graham is frequently called upon to speak at industry conferences and by the news media. He also serves as the Independent Safety Advisor to the Board of British Airways and TUI Northern Region Airlines.



## Cengiz Turkoglu, Senior Lecturer in Safety Engineering

Cengiz worked as an aircraft maintenance engineer, quality auditor and continuing airworthiness manager in industry. He has been an IOSA auditor since 2008, Vice-Chairman at UK Flight Safety Committee since 2015 and VP Technical at International Federation of Airworthiness since 2017. He contributes to the EASA 'Collaborative Analysis Groups' for the development of 'European Plan for Aviation Safety'.



## Dr David Barry, Senior Lecturer Aviation Safety Management

David's entire career has been in aviation, specialising in operational safety and risk for over 20 years. As a former safety manager at a UK airline for over 10 years, he was responsible for operational safety and developing the company's safety management system. David was awarded a master's degree with distinction in Air Safety Management in 2008 at City University, London, and in 2020 graduated with a PhD in Operational Risk in Aviation from Cranfield.



## Dr Jim Nixon, Senior Lecturer in Human Factors

Jim is a chartered psychologist and lectures in human factors in aviation safety. He leads the modules in Cognitive Ergonomics and Research Methods. Prior to coming to Cranfield, Jim was a Principal Human Factors Engineer at BAE Systems Advanced Technology Centre, applying human factors in a defence context, and a Human Factors Specialist at NATS (formerly the National Air Traffic Services).

### Other full-time staff within the Safety and Accident Investigation staff include:

- Dr Abdul Abushalla, Research/Teaching Fellow,
- Craig Cattell, Lecturer,
- Dr Leigh Dunn, Lecturer,
- Dr Wen-Chin Li, Senior Lecturer,
- Alan Parmenter, Manager, Accident Investigation,
- Dr Joni Pelham, Research/Teaching Fellow,
- Dr Colin Pilbeam, Reader,
- Dr Simon Place, Senior Lecturer,
- Janos Rozsa, Lecturer.

# Key facts and statistics

## Course information



**Full-time**  
**One year**



**Part-time**  
**Two to three years**

See the course page for more information about part-time study.



**Start date**

Various - please visit course pages for more information.



**MSc/PgDip/PgCert**



**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.

See [www.cranfield.ac.uk/fee-information](http://www.cranfield.ac.uk/fee-information)

## Cohort profile\*



**Geographic spread**  
**26% UK**  
**35% EU**  
**39% Rest of world**



**Average cohort age**

**Full-time:**  
19-29 years

**Part-time:**  
30-50 years



**Average cohort size**  
**18**

\*These figures give an indication of the course make-up at registration across our safety and accident investigation courses for the entry 2020-2021.

## Accreditations

The University has applied for the Airworthiness MSc to be re-accredited by the Engineering Council and at the time of publication, a decision has yet to be made. Accreditation is undertaken by one or more of the professional engineering institutions (PEIs) that are licensed by the Engineering Council, to its standards set out in UK-SPEC. A degree may be accredited by more than one PEI, particularly where it spans several engineering disciplines. You can check the accreditation status of this, or any other degree programme, at [engc.org.uk/acad](http://engc.org.uk/acad) or visit the course webpage for further details.

The Safety and Human Factors in Aviation MSc is accredited by the Chartered Institute of Ergonomics and Human Factors.



# Financing your studies

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

There is more information on our website:  
[www.cranfield.ac.uk/funding](http://www.cranfield.ac.uk/funding)

# How to apply

Read more about our entry requirements and how to apply.

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



# Life at Cranfield

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](http://www.cranfield.ac.uk/visit)



Take a virtual tour to see inside some of our facilities:

[virtualltour.cranfield.ac.uk](http://virtualltour.cranfield.ac.uk)

Cranfield University works with over

**1,500** businesses and governments  
based in over 40 countries

These organisations include:



AIRBUS



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

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

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[blogs.cranfield.ac.uk](http://blogs.cranfield.ac.uk)

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. Photographs in this publication were taken prior to and during the coronavirus pandemic. We continue to monitor the pandemic and take all the necessary steps to ensure the health, safety and wellbeing of our Cranfield community. See [www.cranfield.ac.uk/coronavirus](http://www.cranfield.ac.uk/coronavirus) SATM-SAI-September 2021.