

The logo consists of a white circle with a thick black border. Inside the circle, the word "Cranfield" is written in a bold, black, sans-serif font. Below it, the words "Defence and Security" are written in a smaller, black, sans-serif font, stacked on two lines.

**Cranfield**  
Defence and  
Security

Continuing  
Professional  
Development

# Defence and Security

2023/24

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## Welcome

At Cranfield University, we have an established track record within the Defence and Security sector of delivering high quality professional courses and bespoke education and training to the UK Armed Forces and Government and to international governments, defence forces, agencies and worldwide industry.

# What we can offer you

## Career development

Investing in your professional competencies is essential in developing the higher level skills needed to progress in your career and also to help you improve your organisation's capability. Our courses are the ideal step towards senior technical or management roles; giving you the expertise and confidence to have a major influence on the success of your organisation.

## Professional accreditation

Our courses can contribute to your portfolio of evidence for Chartership registration. Many of our courses are accredited by various professional bodies.

## Military and industrial expertise

Course content is developed by acknowledged experts who incorporate professional expertise with current knowledge gained through active participation in defence and security research and consultancy. The courses are also developed in conjunction with guidance from Advisory Boards which consist of relevant experts from the defence and security sector including UK MOD, the Services and industry.

## Networking opportunities

Our courses include opportunities for meeting fellow students from UK and International Armed Forces, UK and International Governments and worldwide industry. You will also meet visiting lecturers who are experts across the relevant sectors, providing new insights and current thinking on best practices.

# What we can offer employers

## Increased organisational capability

The defence and security courses allow you to cost effectively meet skill and knowledge shortages by creating well educated and motivated professionals. Courses are designed to address wider personal skills as well as improving specialist knowledge.

## Flexible delivery and practical learning

We can develop bespoke courses to meet specific needs and deliver them at our locations or on a customer's site as appropriate.

Our approach is to provide students with the correct and appropriate combination of delivery means. This includes lectures and distance delivery in combination with practical exercises which reinforce and extend knowledge and the wider understanding.

Our courses are flexibly delivered and based on a combination of classroom, lab, distance learning and coursework.

## Teaching staff

Our staff are acknowledged experts in their fields who are continuously involved in teaching the defence forces, government and wider industry in courses up to master's level and in research and consultancy to maintain their currency and relevant experience.



# Defence and security short courses

Cranfield Defence and Security can offer you a unique gateway into defence education. Our staff and secure facilities are at the forefront of their fields, offering diverse capabilities across defence and security, leadership and management, engineering and technology.

We have a wide range of short courses which allow you to advance your professional and technical development.

To find out more about our short courses, please visit:  
[www.cranfield.ac.uk/defenceandsecuritycpd](http://www.cranfield.ac.uk/defenceandsecuritycpd)



## Acquisition

### Courses

Capability and Acquisition Programme - Module 4 (Requirements Management)
Financial and Military Capability Management - Advanced
Introduction to Defence and Security
Logistics Modelling
Project Oriented Environmental Management Systems Practitioner
Strategic Management in Defence
Strategic Trade Controls and Compliance



# Counterterrorism

## Courses

Applied Counterterrorism
Chemical, Biological, Radiological and Nuclear (CBRN) Terrorism
Counterterrorism and Intelligence
Cyberterrorism
Diplomacy and Conflict Resolution
Protecting Critical Infrastructure
Risk, Crisis and Resilience
Strategies, Ideologies and Tactics of Terrorism
Terrorism and the Law
Terrorism Risk Management and Mitigation
Understanding Terrorism and Counterterrorism

Please Note: Terrorism Risk Management and Mitigation will take place at Cranfield University at Shrivenham. All other Counterterrorism courses will take place on our Cranfield campus.



# Military Air Systems

## Courses

Advanced Radar
Advanced Sensor Data Processing
Aerial Warfare Engineering
Aeronautical Engineering - Fundamentals (OLAE)
Aircraft Survivability
Airworthiness of Military Aircraft
Fixed Wing Aeromechanics
Guided Weapons
Guided Weapons Aerodynamics
Guided Weapons Energetics
Guided Weapons Structures, Aeroelasticity and Materials
Guided Weapons Control Theory
Guided Weapons Propulsion
Military Aircraft Systems
Military Avionics
Military Electronic Warfare
Propulsion Systems
Radar Electronic Warfare
Radar Principles
Rocket Motors and Propellants
Rotary Wing Aeromechanics



# Military Land Systems

## Courses

Fighting Vehicle Design
Gun Propellants
Light Weapon Design
Military Vehicle Dynamics
Military Vehicle Propulsion
Military Vehicle Propulsion and Dynamics
Munitions and Target Response
Ordnance Design
Ordnance, Munitions and Explosives Safety (Intermediate)
Ordnance, Munitions and Explosives Safety (Awareness)
Pyrotechnics
Reliability and Systems Effectiveness
Uninhabited Military Vehicle Systems
Vehicle Systems Integration
Weapon Systems Technology



# Systems Analysis and Engineering

## Courses

Decision Analysis
Discrete and Continuous Simulation
Experimentation Analysis and Trials for Simulation
Foundations of Modelling and Simulation
Introduction to Defence Simulation
Introduction to Operational Research Techniques
Military Operational Analysis Appreciation
Networked and Distributed Simulation
Networked and Distributed Simulation Exercise
Professional Wargaming Introduction
Simulation Employment Training
Systems Thinking in Practice
War Gaming and Combat Modelling
Weapon Systems Performance Assessment



# Underpinning disciplines

## Courses

Ballistic and Cruise Missile Technology: Introduction
Ballistics
CAD and CFD for Military Aeronautics
Chemical, Biological, Radiological and Nuclear Defence Science
Commercial Explosives
Communication Principles
Communication Systems
Communications Electronic Warfare
Computer Graphics
Counter Improvised Explosive Devised Capability
Defence and Security Offset
Defence Electro-Optics and Imaging Systems
Defence Sector and Organisational Behaviour
Defence Strategic Support Management (DSSM)
Delivery Systems
Design for Vulnerability
Effective Solutions for Identification of Explosive Contamination
Electro-Optics and Infrared Systems Part 1
Electro-Optics and Infrared Systems Part 2
Environmental Awareness and Compliance in Defence

Explosives and the Environment
Explosives I Introduction: Online
Explosives II Introduction: Online
Explosives III Introduction: Online
Failure of Structural Material
Finite Element Methods in Engineering
Fundamentals of Ballistics
Information Networks
Intelligent Systems
Introduction to Defence and Security
Introduction to Explosives Engineering
Introduction to Human Factors
Leadership Studies - Classical and Modern
Legal, Ethical and Political Defence & Security Frameworks
Manufacture and Materials Properties of Explosives
Military Laser Safety
Modelling Simulation and Control
Negotiations
Pre-Sessional Postgraduate Studies
Psychology of Leadership
Royal Engineers Force Protection Engineering
Safety Assurance for EOE
Signal Processing, Statistics and Analysis
Statistical Analysis and Trials
Survivability
Testing and Evaluation of Explosives
Military Electronic Warfare
Rocket Motors and Propellants
Discrete and Continuous Simulation
Introduction to Operational Research Techniques
Simulation Employment Training
Systems Thinking in Practice
War Gaming and Combat Modelling
Weapon Systems Performance Assessment

## For more information

To find out more about our defence and security short courses, contact:

T: +44 (0)1793 785810

E: [courses.shrivenham@cranfield.ac.uk](mailto:courses.shrivenham@cranfield.ac.uk)

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

# Progression routes

Many of the short courses in this brochure are modules from our popular MSc programmes, as such these modules can be taken for credit. Participants can accumulate credits towards a postgraduate qualification. Typically a one-week course is worth 10 credits.

In order to receive Cranfield credits, delegates must register as an associate student and successfully pass the assessment associated with the course, this is usually an assignment or examination.

Your progression route to a postgraduate qualification (PgDip, PgCert, MSc, MDes) will depend on your chosen postgraduate course of study, students wishing to take this route will need to check with us which short courses can be considered. To find out more about our short courses, please email: [courses.shrivenham@cranfield.ac.uk](mailto:courses.shrivenham@cranfield.ac.uk)

## Postgraduate Certificate

**60 credits**

Comprises a subset of the syllabus for the taught element of the associated MSc/PgDip course.

## Postgraduate Diploma

**120 credits**

Typically the PgDip represents the taught element of the associated MSc, although occasionally the curriculum requires a group project or integrated assessment.

## Master of Science

**200 credits**

Typically requires an individual thesis project on top of the taught elements.





# In-company and customised training

## How can you help your business and employees reach their full potential?

Have you considered in-company training, tailored to your business needs? Our insight is rooted in our powerful industry links, world-class research and what works in practice. As such, we can make a real difference to you and your organisation, whether you are a multi-national company, a growing SME or a small start-up. Benefit from having tailor made courses specific to your business needs, at a time and place that suits you.

We can provide a range of programmes from half-day workshops, to intensive week-long training, informed by the latest research and delivered by leading experts in the field.

Talk to us about how we can develop your staff and enhance performance in your organisation.

E: [courses.shrivenham@cranfield.ac.uk](mailto:courses.shrivenham@cranfield.ac.uk)



# Academic staff

One of the strengths of Cranfield is that we bring together a world-class group of experts to share their experiences.

Our staff come from a mix of academic, military and industry backgrounds. You will be taught by a wide range of subject specialists drawn from the University staff and supported by industry professionals, who bring their research and industrial expertise to provide stimulating and informed input to your learning experience.



# Past attendees

Across our range of courses, we have welcomed many high-profile organisations. These include, but are not limited to:

- Airbus,
- Amec Foster Wheeler,
- BAE Systems,
- Boeing,
- Centrica,
- Danish Army,
- EDF Energy,
- ESB International,
- EthosEnergy,
- Galileo,
- GE Power,
- Lockheed Martin,
- Marshall Aerospace and Defence Group,
- Mercedes-AMG Petronas Formula One Team,
- MBDA,
- Ministry of Defence,
- NESCOM,
- Norwegian Navy,
- Pakistan Navy and Air Force,
- Petrobras,
- Raytheon.

# Locations

At Cranfield our continuous professional development courses are held in various locations.

## Cranfield University at Shrivenham

Cranfield University at Shrivenham is located at the Defence Academy, which is a secure Ministry of Defence (MOD) site. It is situated in beautiful countryside near Swindon, with quick and convenient links to London and major UK airports.

## Cranfield Campus

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.

## Cranfield Ordnance Test and Evaluation Centre (COTEC)

COTEC is situated on the edge of Salisbury Plain in Wiltshire. Delegates will have the opportunity to use the facilities at COTEC to undertake exercises, evaluations and independent tests at this safe and expert site where relevant to the programme they are undertaking.



Please note: Where appropriate some of our courses may be delivered online. Please refer to the specific course webpage to see the delivery location and method.

## Virtual tour

See inside some of our facilities:  
[virtualexperience.cranfield.ac.uk](http://virtualexperience.cranfield.ac.uk)

Important information about security clearance for courses that are held in full or part at Shrivenham Some Cranfield University courses are delivered at the Defence Academy of the United Kingdom, Shrivenham which is a Ministry of Defence (MOD) site. All applicants to courses that are wholly or partially delivered at Shrivenham must complete the Shrivenham Station Baseline Personnel Security Standard Course/Visitors/Employment (Annex D to SSSO 40) or must already hold a security clearance to this level or higher. Please refer to the course page on the website for full details.

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

Cranfield University at Shrivenham  
Shrivenham, Swindon  
SN6 8LA

T: +44 (0)1793 785810  
E: [courses.shrivenham@cranfield.ac.uk](mailto:courses.shrivenham@cranfield.ac.uk)

Cranfield University  
Cranfield, Bedfordshire,  
MK43 0AL

T: +44 (0)1234 754189  
E: [shortcourse@cranfield.ac.uk](mailto:shortcourse@cranfield.ac.uk)

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