Resilience, counterterrorism and organised crime

2018-2019
Symposia
Symposia at Shrivenham provides a forum to Government agencies, military and civilian, industry and research establishments for the exploration and exchange of experience, knowledge and ideas.

Master’s degrees
Most of our staff have industry backgrounds and are leading experts in their fields. Industry experts teach alongside our academic team on many of our programmes providing real-life challenges.

Research
Underpinned by leading experts, our research activities help individuals and businesses address defence and security issues and enable real impact returns for your organisation.

Consultancy
There are a variety of ways your business can benefit from collaborating with Cranfield, from simple consultancy projects to multiple partner collaborations. We can be your conduit to the academic world, giving you access to the latest thinking and knowledge in defence and security.

Short courses
Diverse suite of Defence and Security professional development courses. A number of our short courses can be used to gain credits to be put towards a Cranfield degree.

Facilities
We also have a wealth of specialist facilities and equipment to assist our clients and support our research activities. Many are industrial scale and unique to Cranfield Defence and Security.
Resilience, counterterrorism and organised crime

Cranfield’s resilience, counterterrorism and organised crime capability comprises world leading educational opportunities – including short courses and Postgraduate Certificate, Diploma and Master’s qualifications – and cutting-edge research with access to specialist facilities and equipment. Symposia provide a forum to engage with government agencies, industry and research establishments, and consultancy services give access to the latest thinking and knowledge in defence and security.

The challenges facing governments, security services and armed forces in their efforts to protect citizens, businesses, infrastructure and public services have never been so complex or immediate. The resilience of individuals, communities and nations is being tested as never before. Cranfield’s capabilities embrace the specialist skills that now form an essential component of our defences against the many current and future threats we face from a variety of sources. They also provide the expertise to help us recover from incidents, apprehend those responsible and build additional capability and future resilience.

Counterterrorism education, research and consultancy covers the history, development and academic study of terrorism in order to enable the development of evidence-based counterterrorism policies. We work to develop the analytical ability to assess countermeasures and understand their ethical management, and assess the roles of intelligence, security and law enforcement agencies, the military and the media.

Expertise in digital forensics, forensic ballistics, and forensic explosives and explosion investigation focuses on the use of cutting-edge techniques to analyse crime scenes and examine how forensic evidence can be used to help resolve issues in relation to criminal and civil law.

We work with organisations such as:
Our full-time graduate programmes in defence and security offer the highest standards of education and address the changing needs of an evolving sector. The modular structure of many of our courses offers students the flexibility to study at their own pace and exit with a Postgraduate Certificate, Diploma or Master’s (PgCert, PgDip, MSc) qualification, or simply to study an individual module.

**Digital Forensics MSc, PgDip, PgCert**
This is a new and dynamic area of criminal investigation, with new tools, techniques and methods constantly available to both the investigator and the investigated. This course offers a carefully blended mix of fundamental principles and advanced techniques, focusing on providing the knowledge and skills required to conduct comprehensive forensic examinations of digital devices. Students have access to three dedicated computer laboratories which include the latest versions of popular commercial software as used by professional forensic analysts.

**Forensic Ballistics MSc, PgDip**
This course explains how firearms and ammunition function, the science of ballistics, the role of the forensic firearms examiner and how the forensic evidence produced in gun crime can be used to help resolve issues in relation to criminal and civil law. Students will have practical experience in firearms handling and examination, and be introduced to the interpretation of UK firearms law, comparison microscopy and serial number restoration. The course provides students with a platform to utilise these skills in forensic science and other industrial and research-based applications.

**Forensic Explosive and Explosion Investigation MSc, PgDip**
Students are introduced to the investigation of explosive and chemical, biological, radiological and nuclear crime scenes. The course teaches cutting-edge investigative and analytical techniques such as forensic intelligence, exploitation and open-source intelligence. Students have access to Cranfield University and MOD test facilities, and draw on the experience of staff from Impact and Armour – Cranfield’s centre for impact mechanics and terminal ballistics – and the Cranfield Centre for Defence Chemistry. Speakers and projects are drawn from DSTL, MOD, FERA, NIST, the Metropolitan Police and many other agencies.
**International Defence and Security** MSc, PgDip, PgCert

This course draws upon our established expertise in international security, foreign and defence policy analysis, security studies, international law, conflict resolution and environmental issues. The course content is dynamic, challenging and cutting-edge, designed to equip you with the skills and insights needed to deal with and confront the challenges presented by contemporary world politics. It addresses current and future security issues, with modules ranging from International Security to Counter-Terrorism and Resilience. Participants come from a range of backgrounds, some who have recently completed their undergraduate degrees, others who are civil servants working within defence.

**Security Sector Management** MSc, PgDip, PgCert

A surge in the delivery of international aid courses and increased calls for capacity-building to be at the heart of the global security agenda have led to the requirement for new knowledge and skill sets. This course helps individuals to acquire and apply such skills and knowledge to current and future challenges in transitional societies. Our experts will share their knowledge on a wide range of current global security-related challenges, such as governance, the environment, information security and institution building, as well as ideas and frameworks to respond to these challenges.

The course will enable participants to be able to develop and implement strategic security sector plans and analyse, communicate and evaluate the broader implications for related areas within state and regional frameworks.

**Sensors Electronic Warfare** PgCert

The focus for this course is on the specification, analysis, development, procurement, and technical management of military radar, electro-optics and infrared sensor systems, to inform the defence of these systems from cyber attack or intercept. Core modules also include electromagnetic propagation and devices, and signal processing, statistics and analysis.

* Full-time only   ** Part-time only
“The modules were so beneficial as they highlighted all aspects required for a forensic practitioner in the quest for complete expertise. The analytical techniques opened up my understanding of a range of new techniques, which are so vital to the scientific arena. The laboratory work and written reports helped me learn about how to perform exhaustive examination analysis and summarise findings in common language.”

Antony Nyombi, Government Analyst, Directorate of Government Analytical Laboratory in Uganda, Forensic Ballistics MSc, 2013
Cranfield has a diverse suite of short courses that meet the challenges and requirements of a changing and complex sector. Our portfolio offers the maximum scope for personal development and, at the same time, balances your time and resource pressures.

**Chemical, Biological, Radiological and Nuclear Defence Science**
Covers CBRN hazards, toxicology, physical nature and delivery, and the science behind the methods used to protect military and civilian populations.

**Counter Improvised Explosive Device Capability**
Provides to military and civilian MOD staff and approved industry personnel the knowledge for development, use and counter measures associated with improvised explosive devices.

**Digital Crime and Investigation**
Covers various processes involved in the investigation of digital crime, including the seizure of digital evidence, examination of seized devices, construction of reports and knowledge of relevant law.

**Forensic Exploitation and Intelligence**
Covers various principles and applications of the major forensic analytical techniques used in Forensic Intelligence (FORINT) and exploitation.

**Forensic Investigation of Explosives and Explosive Devices**
Reviews fundamentals of improvised explosive devices and the application of chemical analysis techniques in forensic explosives investigations.

**Forensic Computing Foundations**
Provides the skills to recover forensic evidence from digital devices. Forensic Exploitation and Intelligence.
Short courses

**Forensic Ballistics Investigations**
Examines principles of internal, intermediate, external, terminal and wound ballistics and how they are used in forensic investigations.

**Fakes and Forgeries**
Covers various principles of forensic and scientific investigations into art objects.

**Failure Analysis of Components**
Explores a range of modes and causes of failure in engineering components through examination.

**Firearms Investigations**
Examines firearms operation and fundamental techniques involved in criminal firearms investigations.

**Fires, Explosions and their Investigation**
Explores fire dynamics and the characteristics of explosives, their effects on buildings and people and the physical effects that would be looked for in their investigation.

**Hazardous Forensics**
Covers fundamentals of Chemical, Biological, Radiological and Nuclear (CBRN) threats and hazardous investigations and analysis techniques to ensure a safe methodical investigation.

**Introduction to Firearms Investigations and Forensic Ballistics**
Examines principles of forensic investigations involving firearms and the investigation of projectile ballistics.
Mass Fatality Incidents
Reviews issues facing forensic and management personnel after a mass fatality incident and the procedures in place to help return to normality.

Ordnance Munitions and Explosives Awareness
Complements the Ministry of Defence OME safety head of profession competency framework at awareness level.

Ordnance Munitions and Explosives Intermediate
Examines the nature and properties of OME and the regulatory controls.

Terrorism and Conflict Resolution
Reviews counter-terrorism measures and the sociological and general social science concept of terrorism and conflict resolution.

Weapon Systems Technology Introduction
Examines the engineering and technology behind large calibre guns and cannons demonstrating why guns and their components are shaped the way they are.

Further details of all our short courses can be found at: www.cranfield.ac.uk/cpd
Short course bookings E: courses.shrivenham@cranfield.ac.uk or T: +44 (0)1793 785810
Research and consultancy

Our work informs policy for governments, management best practice and produces new technologies and products for the world of commerce. Global warming, flooding, disease prevention, national security - these are just a few areas in which we strive to apply our research and teaching to real problems.

Our research activity spans:

• consultancy
• problem solving
• product development and testing
• research degrees.

We draw on our pool of research to provide our postgraduate students with a distinctive, mature and ‘real world’ learning environment allowing them to develop as professionals and transfer their new knowledge to the global economy.

Research for business
We play a major role in the innovation strategies of our partners, frequently as the key research and development capability in core areas of their business. Our practical and applied approach addresses the needs of industry and exploits emerging research ideas of relevance to real life.

Research for students
As a wholly postgraduate university, we offer a focused and stimulating study environment where you will be part of a like-minded community of professionals. As a researcher studying for a higher degree at Cranfield, you will have the opportunity to attend joint training and networking events.

For more information visit www.cranfield.ac.uk/study
Our unique relationship with the UK Ministry of Defence allows access to world class secure capabilities and Cranfield is home to a range of facilities not found in any comparable academic institution. We can provide independent expertise, consultancy, research and prototyping directed by renowned academics and supported by experienced technical staff.

**Cranfield Ordnance Test and Evaluation Centre (COTEC)**

COTEC is an independent testing, evaluation and research facility situated on Salisbury Plain in Wiltshire. The Centre is equipped to carry out a wide range of explosives and ballistic testing on the explosive formulations and Ordnance. COTEC also houses licenced explosive storage and processing facilities and has a fully equipped classroom where training sessions can be carried out prior to practical sessions on the range.

**Accident Investigation Laboratory**

This facility is located on the Cranfield Campus and provides a realistic multi-modal safety and accident investigation training environment for trainee investigators. Featuring real life air, rail and marine accident exhibits, this laboratory is unique in teaching establishments outside of the United States and complements our renowned full-scale field exercises.

**Digital Forensics Computer Laboratory**

Comprising of five different bespoke computer laboratories, this facility allows students to conduct comprehensive forensic computing examinations and participate in cutting-edge digital forensic research. The software selection mirrors a typical police laboratory, including EnCase 6 and 7, FTK, WinHex, NetAnalysis, Internet Evidence Finder, VMWare, and more.

For further details on our facilities visit: [www.cranfield.ac.uk/facilities](http://www.cranfield.ac.uk/facilities)
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 to Swindon, with quick and convenient links to London and major UK airports.

Full directions are available at www.cranfield.ac.uk/visit

Important information about security clearance for courses that are held in full or in 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 these courses must complete HMG Baseline Personnel Security Standard V4 April 2014 (BPSS) prior to registration on the course or must already hold a security clearance to this level or higher. It will take additional time to process your BPSS clearance application and you will not be able to do this course if you fail to obtain this. Please refer to the course page on the website for full details.

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