

# **Master of Science/Postgraduate Award in Cyber Security and Management**

*Developed and awarded by The University of Warwick, UK*

## **MODULE OUTLINES**

### **Security Architectures and Network Defence**

This module is designed to be the first module that is studied by students on MSc Cyber Security and Management. It defines the cyber security context and introduces a broad range of cyber security terminology in order for students to comprehend future study concerning the cyber domain.

The overall aim of the module is for students to comprehend the common security controls available to prevent, detect and recover from network security incidents and to mitigate risk.

### **Information Risk Management and Governance**

This module develops an understanding, both of the risks that digital information and network assets are exposed to, and of how to manage the risks for the benefit of the enterprise; this includes home users, e-commerce, and all organisations using digital networks for infrastructure, both closed and open. Therefore, this module is relevant for the majority of organisations in existence today or likely to exist in the future.

### **Digital Forensics**

Digital forensics seeks to overcome the substantial challenges of drawing correct inference from digital data, so that decisions about the identity of the wrongdoer, and the sanctions that follow, may be made with greater confidence from a better informed perspective.

There are a number of principles that have been established by the digital forensics community. From these a range of tools and techniques have been developed for doing standard things in typical circumstances. Analysing the capabilities and limitations of these tools and techniques is an important part of the module. Representing what has been inferred to a non-specialist audience is also a critical part of any investigation and is practised in the module.

Ultimately, this module exposes the student to the entire investigative lifecycle of a case.

### **Crypto Systems and Data Protection**

This module aims to give students critical insight into how to select the appropriate cryptographic solution to solve the information assurance problem at hand. The properties and uses of cryptographic hashes are critically analysed. Particular attention is given to their role in assuring data integrity and in password management. Different attacks (brute force, dictionary, rainbow tables, synthetic collisions) and mitigations (salting, stretching, large keyspace) are also analysed.

### **Industrial Espionage and Counterfeiting**

In this module students will discover the motivations for industrial espionage, the methods of execution and the possible defences and countermeasures. This will include anti-counterfeiting technologies, track and trace, forensics, staff vetting and physical security.

There will be emphasis on cyber attacks and defences which will complement the other modules on the course.

## **Financial Analysis and Control Systems**

This module provides an understanding of basic accounting principles, terminology and techniques; so that in their work, participants can interpret financial reports and appropriate management accounting practices, and contribute to departmental financial planning and control.

## **Innovation**

Many organisations are finding that in order to succeed in increasingly competitive markets they need people who can manage innovation. Although useful insights abound within literature, the body of knowledge on the subject remains disjointed and the adoption of the appropriate skills within industry has been slow. This module aims to help participants develop new skills and knowledge about innovation that will enhance their ability to contribute to the long term competitiveness of businesses.

## **Logistics and Operations Management**

Effective logistics management is a critical factor in improving corporate profitability. The module introduces the concept of logistics and provides a comprehensive framework of tools to improve logistics and operations management performance.

## **Leading Change**

Critical to successful organisations and the achievement of continued high standards of operation, is the ability of managers to introduce successful change that yields benefits. In recent years most companies have, with varying degrees of success, introduced new initiatives in areas such as Total Quality, Planning and Control and Continuous Improvement. More recently Business Process Re-Engineering (BPR) has been a favoured vehicle for achieving step change improvements in customer service and business efficiency.

Whatever the approach and however big or small the desired change, successful and outstanding results are only achieved when managers have a clear understanding of how individuals are motivated and how groups of people work as a team and react to one another. This module will provide participants with this knowledge.

## **Organisations, People and Performance**

This module introduces engineers and technical people to the 'people' aspects of an organisation. The emphasis is on increasing the participant's knowledge and understanding of strategic human resource issues that affect operations on a daily basis.

Organisational, behavioural and management concepts will be explored with the objective of providing participants with a theoretical foundation sufficient to evaluate the Human Resource Strategies of their own organisation.

Module delivery is interactive and draws upon the participant's organisational experience as much as possible.

## **Procurement and Inventory Management**

This module puts emphasis on the design and management of processes and control systems of the inbound supply chain. The content that is covered in this module includes procurement processes and strategies, risk pooling and multi-stage inventory control systems, value of collaboration and streamlined information and financial flow in supply chains, supplier relationship management as well as elementary and advanced methods for analysis and planning.

## **Project Planning, Management and Control**

This module treats the management of “projects” in the widest context of a business activity with specific limited objectives and timescale, and encompasses both product development and “change” projects. It provides an appreciation of the issues and current techniques for successful project planning and control, including the selection and motivation of project teams.

## **Supply Chain Management**

This module covers a wide range of topics in supply chain strategies, design, planning, operations and development. Emphasis has been mainly on the perspective of integrated supply process. Releasing value in business through relationship management, cost reduction and lean supply have been the key considerations. The module also provides real world cases of supply chain management, which illustrate ways of achieving enduring competitiveness.

## **MSc Dissertation**

The MSc dissertation should comprise of the following:

- Address a research question directly relating to cyber security;
- Demonstrate understanding of the particular issues around conducting research in the cyber domain; and
- Conduct research in the cyber domain in an appropriate manner

The individual MSc Dissertation comprises 50% of the assessed marks for the MSc degree. Participants are expected to devote an appropriate portion of time and intellectual effort to the programme equivalent to approximately 900 hours for the MSc dissertation. Participants must successfully complete the MSc dissertation to be awarded a Master’s Degree.