

Module Specification

Module Summary Information

1	Module Title	Data Storage and Recovery
2	Module Credits	20
3	Module Level	5
4	Module Code	CMP5330

5	Module Overview
<p>This module aims to develop advanced knowledge and practical skills essential in the recovery of fully functional, damaged or partially destroyed data storage devices such as hard drives, flash memory and solid state media. In addition to physical data recovery, you will develop key skills in logical data recovery using a wide range of specialist proprietary and open-source hardware and software. Emphasis is placed on the responsibilities and duties of care a digital forensics analyst must observe in the data acquisition stage of a digital forensics investigative life-cycle.</p> <p>This module emphasises a “hands-on” approach to learning forensic computing techniques using open-source and commercial forensic tools. The module will teach you the fundamental data structures applicable to computer forensics and how various tools can be exploited to analyse these structures in a variety of case types.</p> <p>The module is delivered through a flipped methodology placing significant emphasis on the development of practical skills supported by blended learning and a variety of learning activities including lectures, seminars, practice-led, self-directed and experiential learning; in person and online through Virtual Learning Environments (VLE).</p> <p>Each practical session comprises a series of hands-on analytical experiments to progressively unpack the more advanced aspects of the topic being investigated. All practical sessions will be hosted in the specialist Computer Forensics Laboratory.</p> <p>The post session activities for each week will comprise a short formative Moodle quiz which will provide instant feedback on the theoretical material covered. For each week’s lab session, there will be an accompanying video taking you step-by-step through the solutions of the practical lab exercises.</p>	

6	Indicative Content
<ul style="list-style-type: none"> • Physical drive fault diagnosis • Logical drive fault diagnosis • Hard drive firmware modules • Manipulating the HPA and DCO • Principles of forensic drive imaging • Hard drive geometry and partitioning schemes • Raid systems and the logical disk manager • Physical and logical data recovery • Network storage systems • Ram imaging techniques • Flash drive repair and recovery 	

- SSD technology
- Working with virtual hard disk file formats

7	Module Learning Outcomes	
	On successful completion of the module, students will be able to:	
	1	Apply appropriate fault diagnosis and repair techniques to data storage devices for the purposes of data recovery.
	2	Create forensically sound images of data storage devices in preparation for subsequent analysis.
	3	Reconstruct and recover data from data storage devices containing data that is otherwise corrupted or inaccessible.

8	Module Assessment		
Learning Outcome		Coursework	Exam
1, 2, 3		X	

9	Breakdown Learning and Teaching Activities	
Learning Activities		Hours
Scheduled Learning (SL) includes lectures, practical classes and workshops, peer group learning, Graduate+, as specified in timetable		48
Directed Learning (DL) includes placements, work-based learning, external visits, on-line activity, Graduate+, peer learning, as directed on VLE		48
Private Study (PS) includes preparation for exams		104
Total Study Hours:		200