Title of Module: JTAG & Chip-Off Forensics			
Code: COMP11084	SCQF Level: 11 (Scottish Credit and Qualifications Framework)	Credit Points: 10	ECTS: 5 (European Credit Transfer Scheme)
School:	School of Computing, Engineering and Physical Sciences		
Module Co-ordinator:	Muhammad Zeeshan Shakir		

Summary of Module

The module aims to furnish students with the specialised understanding and practical skills required to successfully conduct advanced forensic acquisitions and analysis using the latest JTAG and advanced chip-off techniques to acquire the raw data and the methods to decode extractions properly.
The module will examine the JTAG process and flash memory chip removal techniques, electrical theory, and the specialised equipment necessary for successful extractions. Students will gain con dence through practical exercises.

Module Delivery Method

Face-To-Face	Blended	Fully Online	HybridC	HybridO	Work-based Learning
	✓				

Face-To-Face
Term used to describe the traditional classroom environment where the students and the lecturer meet synchronously in the same room for the whole provision.
Blended
A mode of delivery of a module or a programme that involves online and face-to-face delivery of learning, teaching and assessment activities, student support and feedback. A programme may be considered "blended" if it includes a combination of face-to-face, online and blended modules. If an online programme has any compulsory face-to-face and campus elements it must be described as blended with clearly articulated delivery information to manage student expectations
Fully Online
Instruction that is solely delivered by web-based or internet-based technologies. This term is used to describe the previously used terms distance learning and e learning.
HybridC
Online with mandatory face-to-face learning on Campus
HybridO
Online with optional face-to-face learning on Campus
Work-based Learning
Learning activities where the main location for the learning experience is in the workplace.

Campus(es) for Module Delivery						
The module will **normally** be offered on the following campuses / or by Distance/Online Learning: (Provided viable student numbers permit)						
Paisley:	Ayr:	Dumfries:	Lanarkshire:	London:	Distance/Online Learning:	Other:
			✓			

Term(s) for Module Delivery

(Provided viable student numbers permit).					
Term 1	✓	Term 2	✓	Term 3	✓

Learning Outcomes: (maximum of 5 statements)
On successful completion of this module the student will be able to: L1. Demonstrate a critical understanding of the specialised theories, concepts and principles required to reconstruct and interpret various evidence sources using JTAG and chip-off techniques.   L2. Apply knowledge, skills and understanding in using the principal skills, techniques, practices required to construct, justify, and execute a forensically sound process for the reconstruction and analysis of stored data including artefacts that may be unreadable by standard forensic tools.   L3. analyse and critically evaluate evidence and procedures specific to the use of JTAG and chip-off techniques and appreciate the challenges they present.

Employability Skills and Personal Development Planning (PDP) Skills	
SCQF Headings	During completion of this module, there will be an opportunity to achieve core skills in:
Knowledge and Understanding (K and U)	SCQF Level 11. Students will learn systematic and comprehensive knowledge of JTAG & Chip-Off Forensics. Students are expected to be familiar with the key technologies and techniques and their application in practice.
Practice: Applied Knowledge and Understanding	SCQF Level 11. Students will gain in-depth, comprehensive understanding and critical awareness of knowledge of JTAG & Chip-Off Forensics, and apply this in the capture and analysis systems software.. They will also develop capability to apply a range of standard and specialised research skills, tools/software, development kit and related techniques in response to application requirements for their written assignment and lab tasks.
Generic Cognitive skills	SCQF Level 11. To complete their written reports and laboratory tasks, students will first build skills to integrate information and apply knowledge from various sources including technology advances informed by research and industry.
Communication, ICT and Numeracy Skills	SCQF Level 11. Working in interacting groups, students will develop communication skills as well as the ability to write technical reports and documentation.
Autonomy, Accountability and Working with others	SCQF Level 11. JTAG & Chip-Off Forensics
Pre-requisites:	Before undertaking this module the student should have undertaken the following:
	Module Code: **Module Title:**
	Other:
Co-requisites	**Module Code:** **Module Title:**

* Indicates that module descriptor is not published.

Learning and Teaching	
An emphasis is placed on active learning, taking place through a collection of complementary mechanisms. Topics will be introduced in lectures and discussed through problem based learning activities and associated practical sessions. Theoretical material will be re-enforced and consolidated through the critical analysis and discussion of case studies designed to provide examples of current practice, approaches and challenges as portrayed by practitioners. Students are guided through scenarios featuring structured inquiry based learning. Directed learning will reinforce essential theory and place understanding into context. In addition, students will adopt an independent learning style, acquiring and applying knowledge through their own enquiry and encouraged to exchange understanding through peer-assisted learning.	

Learning Activities During completion of this module, the learning activities undertaken to achieve the module learning outcomes are stated below:	Student Learning Hours (Normally totalling 200 hours): (Note: Learning hours include both contact hours and hours spent on other learning activities)
Lecture/Core Content Delivery	10
Tutorial/Synchronous Support Activity	5
Tutorial/Synchronous Support Activity	20
Independent Study	65
	100 Hours Total

Indicative Resources: (eg. Core text, journals, internet access)	
The following materials form essential underpinning for the module content and ultimately for the learning outcomes: Bair, J. (2017) Seeking the Truth from Mobile Evidence: Basic Fundamentals, Intermediate and Advanced Overview of Current Mobile Forensic Investigations. Academic Press. Mikhaylov, I. (2017) Mobile Forensics Cookbook: Data acquisition, extraction, recovery techniques, and investigations using modern forensic tools. Packt Publishing.	
(**N.B. Although reading lists should include current publications, students are advised (particularly for material marked with an asterisk*) to wait until the start of session for confirmation of the most up-to-date material)	

Engagement Requirements	
In line with the Academic Engagement Procedure, Students are defined as academically engaged if they are regularly engaged with timetabled teaching sessions, course-related learning resources including those in the Library and on the relevant learning platform, and complete assessments and submit these on time. Please refer to the Academic Engagement Procedure at the following link: Academic engagement procedure	

Supplemental Information

Programme Board	Computing
Assessment Results (Pass/Fail)	No
Subject Panel	Business & Applied Computing

Moderator	Sean Sturley
External Examiner	TBC
Accreditation Details	
Version Number	1.02

Assessment: (also refer to Assessment Outcomes Grids below)
Coursework (100%)
(N.B. (i) **Assessment Outcomes Grids** for the module (one for each component) can be found below which clearly demonstrate how the learning outcomes of the module will be assessed.   (ii) An **indicative schedule** listing approximate times within the academic calendar when assessment is likely to feature will be provided within the Student Handbook.)

Assessment Outcome Grids (Footnote A.)

Component 1

Assessment Type (Footnote B.)	Learning Outcome (1)	Learning Outcome (2)	Learning Outcome (3)	Weighting (%) of Assessment Element	Timetabled Contact Hours	
Clinical/ Fieldwork/ Practical skills assessment/ Debate/ Interview/ Viva voce/ Oral	✓	✓	✓	100	0	
Combined Total For All Components				100%	0 hours	

Footnotes
A. Referred to within Assessment Section above
B. Identified in the Learning Outcome Section above

Note(s):
1. More than one assessment method can be used to assess individual learning outcomes.   2. Schools are responsible for determining student contact hours. Please refer to University Policy on contact hours (extract contained within section 10 of the Module Descriptor guidance note).   This will normally be variable across Schools, dependent on Programmes &/or Professional requirements.

Equality and Diversity
This module is suitable for any student. The assessment regime will be applied flexibly so that a student who can attain the practical outcomes of the module will not be disadvantaged. When a student discloses a disability, or if a tutor is concerned about a student, the tutor in consultation with the School Enabling Support co-ordinator will agree the appropriate adjustments to be

| made. |
| UWS Equality and Diversity Policy |
| (N.B. Every effort will be made by the University to accommodate any equality and diversity issues brought to the attention of the School) |