Title of Module: Programming for Digital Forensics			
Code: COMP11096	**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:	Miriam Birch		

Summary of Module
The module aims to furnish students with the Python programming skills required to write specific programs to complement existing digital forensics software to perform tasks such as acquiring images from disk, memory and the network, file carving, evidence and metadata extraction, locating database artefacts, interacting with web pages and network analysis. The module provides an understanding and the skills to perform Python script development focusing on parsing files, working with serialized data structures, extracting artefacts from binary files, search and indexing.

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 disciplined approach to software development. L2. Design and implement a programmatic solution for a problem in a digital forensics context. L3. Construct, implement and document an appropriate test strategy for a programmatic solution to a digital forensics problem. L4. Construct appropriate supporting documentation for a program that performs a digital forensics task. L5. Justify design decisions and implementation solutions made during the development of a programmatic solution to a digital forensics problem.

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 Programming for Digital 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 Programming for Digital Forensics, and apply this in planning,design and coding for forensic analysis. 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. Each student will generate a comprehensive report summarising his/her finding for a given scenario.
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 guided inquiry and problem based learning activities and with a strong emphasis on practical sessions. Theoretical material will be re-enforced and consolidated through the critical analysis and discussion of case studies in tutorials designed to explain and elaborate both on theoretical and practical content.	

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
Laboratory/Practical Demonstration/Workshop	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: Thornhill, A. (2015) Your Code as a Crime Scene: Use Forensic Techniques to Arrest Defects, Bottlenecks, and Bad Design in Your Programs. Pragmatic Bookshelf Sweigart, A. (2015)Automate the Boring Stuff with Python: Practical Programming for Total Beginners. No Starch Press. McKinney, W. (2017) 2nd Ed. Python for Data Analysis. O'Reilly.
(**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: <u>Academic engagement procedure</u>

Supplemental Information

Programme Board	Computing

Assessment Results (Pass/Fail)	No
Subject Panel	Business & Applied Computing
Moderator	Gerry Creechan
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)	Learning Outcome (4)	Learning Outcome (5)	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)