

University of the West of Scotland

Module Descriptor

Session: 2024/25

Title of Module: Programming for Cyber Security			
Code: COMP08101	SCQF Level: 8 (Scottish Credit and Qualifications Framework)	Credit Points: 20	ECTS: 10 (European Credit Transfer Scheme)
School:	School of Computing, Engineering and Physical Sciences		
Module Co-ordinator:	Raman Singh		
Summary of Module			
This module aims to build on a student's existing programming skills and introduces more advanced techniques such as working with software libraries or application programming interfaces (APIs). The module focuses on a range of cyber security scenarios and introduces programmatic tools and techniques that students can apply to a range of cyber security contexts. Students will work with a range of libraries to build software that automates common tasks such as network scanning or network package manipulation. Students will also work with data and develop tools to support data analytics and data security. Emphasis is placed on the practical application of these techniques and students will gain insight into how software libraries can facilitate the efficient development of cyber security tools. This module will work to develop a number of the key 'I am UWS' Graduate Attributes to make those who complete this module: • Universal: Critical Thinker, Ethically minded, Research-minded • Work Ready: Problem-Solver, Effective Communicator, Ambitious • Successful: Autonomous, Resilient, Driven			

Module Delivery Method					
Face-To-Face	Blended	Fully Online	HybridC	Hybrid 0	Work-Based Learning
☒	☐	☐	☐	☐	☐
See Guidance Note for details.					

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) (tick as appropriate)						
Paisley:	Ayr:	Dumfries:	Lanarkshire:	London:	Distance/Online Learning:	Other:
☐	☐	☐	☒	☐	☐	Add name

Term(s) for Module Delivery					
(Provided viable student numbers permit).					
Term 1	☒	Term 2	☐	Term 3	☐

Learning Outcomes: (maximum of 5 statements) These should take cognisance of the SCQF level descriptors and be at the appropriate level for the module. At the end of this module, the student will be able to:	
L1	Effectively use a variety of software libraries to develop cyber security tools;
L2	Employ software tools to facilitate and automate cyber security processes;
L3	Understand how software tools can be chained to accomplish complex tasks;
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 8 Understanding how software libraries and APIs can be utilised to build a range of cyber security software tools.
Practice: Applied Knowledge and Understanding	SCQF Level 8 Applying software tools to perform a range of cyber security processes.
Generic Cognitive skills	SCQF Level 8 Applying the tools developed to solve more complex problems and scenarios.
Communication, ICT and Numeracy Skills	SCQF Level 8 Report writing and presentation skills.

Autonomy, Accountability and Working with others	SCQF Level 8 Ability to work in a team.	
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	
In line with current learning and teaching principles, a 20-credit module includes 200 learning hours, normally including a minimum of 36 contact hours and maximum of 48 contact hours.	
Learning Activities During the 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	12
Tutorial/Synchronous Support Activity	12
Laboratory/Practical Demonstration/Workshop	24
Independent Study	152
	200 Hours Total
**Indicative Resources: (eg. Core text, journals, internet access)	

The following materials form the essential underpinning for the module content and ultimately for the learning outcomes:

Programming Python by Mark Lutz, 2010, 4th Edition, O'Reilly Media, USA.

Mastering Python for Networking and Security by José Ortega, 2021, Second Edition, Packt Publishing.

Materials will be made available via the module's VLE site.

(*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)

Attendance and Engagement Requirements

In line with the [Student Attendance and Engagement Procedure](#): Students are academically engaged if they are regularly attending and participating in timetabled on-campus and online teaching sessions, asynchronous online learning activities, course-related learning resources, and complete assessments and submit these on time.

Equality and Diversity

The University's Equality, Diversity and Human Rights Procedure can be accessed at the following link: [UWS Equality, Diversity and Human Rights Code](#).

Please ensure any specific requirements are detailed in this section. Module Co-ordinators should consider the accessibility of their module for groups with protected characteristics..

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

Supplemental Information

Divisional Programme Board	Computing
Assessment Results (Pass/Fail)	Yes ☐ No ☒
School Assessment Board	Business & Applied Computing
Moderator	Graham Parsonage

External Examiner	M Davis
Accreditation Details	e.g. ACCA Click or tap here to enter text.
Changes/Version Number	1.03

Assessment: (also refer to Assessment Outcomes Grids below)
Assessment 1 – Portfolio of practical work (40%)
Assessment 2 – Case study and tool development (60%)
(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 Module Handbook.)

Assessment Outcome Grids (See Guidance Note)

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
Portfolio of practical work	✓	✓	✓			40	0

Component 2							
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
Case study	✓	✓	✓			60	0
Combined Total for All Components						100%	0 hours