Module Descriptor

Title	Software Engineering Practice		
Session	2025/26	**Status**	Published
Code	COMP08105	**SCQF Level**	8
Credit Points	20	**ECTS (European Credit Transfer Scheme)**	10
School	**Computing, Engineering and Physical Sciences**		
Module Co-ordinator	Santiago Matalonga		

Summary of Module

This module provides students with essential practices and methodologies employed in practical software engineering. It encompasses a range of different software architectures and their construction, security and privacy aspects, reliable programming methodologies including testing, and source code management strategies. Emphasis is placed on practical application and adhering to industry best practices throughout the delivery of this module.

The syllabus will cover:

- Building Software Systems:
- UML: Class, sequence, activity diagrams
- Design patterns: Creational, Structural and Behavioural
- SOLID Principles, cohesion and coupling
- Software Architectures:
- Design, decomposition, distribution
- Architectural patterns: MVC, Multi-Tier, Client Service, Cloud-based software
- Serverless Architecture: Architecture, RESTful services, deployment
- Security and Privacy
- Threats, risks, attacks and vulnerabilities
- Best Practices: Authentication, authorization, encryption
- Modern Programming Practices
- Unit Testing and Continuos integration

o Source Code Management

 Strategies: change, version, and release management

- Version Control (git)

Module Delivery Method	On-Campus[1] ☐	Hybrid[2] ☒	Online[3] ☒	Work -Based Learning[4] ☐
Campuses for Module Delivery	☐ Ayr ☐ Dumfries	☒ Lanarkshire ☐ London ☐ Paisley	☒ Online / Distance Learning ☐ Other (specify) Online Delivery / Distance Learning applies to delivery in the BSc (Hons) Data, AI and Software Engineering programme only	

Terms for Module Delivery	Term 1	☐	Term 2	☒	Term 3	☐
Long-thin Delivery over more than one Term	Term 1 – Term 2	☐	Term 2 – Term 3	☐	Term 3 – Term 1	☐

Learning Outcomes	
L1	Familiarise with and Understand software architectures, including cloud-based, multi-tier, and microservices, and their design in building modern software systems
L2	Apply architectural and design patterns, as well as UML diagrams, to building software systems, effectively addressing concerns such as separation of concerns and coupling/decoupling
L3	Analyse security and privacy considerations in software engineering, identify potential attacks and defences, implement best practices for authentication, authorization, and encryption, and address privacy concerns
L4	Apply Software Quality principles to to effectively manage the software development lifecycle of software intensive projctsprojects
L5	N/A

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 8**

[1] Where contact hours are synchronous/ live and take place fully on campus. Campus-based learning is focused on providing an interactive learning experience supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus contact hours will be clearly articulated to students.

[2] The module includes a combination of synchronous/ live on-campus and online learning events. These will be supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus and online contact hours will be clearly articulated to students.

[3] Where all learning is solely delivered by web-based or internet-based technologies and the participants can engage in all learning activities through these means. All required contact hours will be clearly articulated to students.

[4] Learning activities where the main location for the learning experience is in the workplace. All required contact hours, whether online or on campus, will be clearly articulated to students

	Awareness and understanding of the different types of software architectures used in practical settings. Understanding of strategies to build reliable software.
Practice: Applied Knowledge and Understanding	**SCQF 8** Use a number of techniques and strategies to manage source code effectively. Apply best practices to implement authentication, authorization and encryption in software systems
Generic Cognitive skills	**SCQF 8** Assessing the strengths and weaknesses of the techniques used
Communication, ICT and Numeracy Skills	**SCQF 8** Convey complex information to a range of audiences and for a range of purposes.
Autonomy, Accountability and Working with Others	**SCQF 8** Work autonomously to a set deadline

Prerequisites	**Module Code** COMP07087	**Module Title** Introduction to Software Engineering
	Other	
Co-requisites	**Module Code**	**Module Title**

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. 48	
Learning Activities During completion of this module, the learning activities undertaken to achieve the module learning outcomes are stated below:	**Student Learning Hours** (Note: Learning hours include both contact hours and hours spent on other learning activities)
Lecture / Core Content Delivery	24
Tutorial / Synchronous Support Activity	12
Laboratory / Practical Demonstration / Workshop	12
Independent Study	152
Please select	
Please select	
TOTAL	200

Indicative Resources

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

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Sommerville, I. (2015). Software Engineering 10th ed. Addison-Wesley.

Sommerville, I. (2020). Engineering Software Products: An Introduction to Modern Software Engineering. Pearson Education.

Thomas, D. and Hunt, A. (2020) The pragmatic programmer : your journey to mastery. Boston: Addison-Wesley.

(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.

For the purposes of this module, academic engagement equates to the following:

The School of Computing, Engineering and Physical Sciences considers attendance and engagement to mean a commitment to attending, and engaging in, timetabled sessions. You will scan your attendance via the scanners each time you are on-campus and you will login to the VLE several times per week. Where you are unable to attend a timetabled learning session due to illness or other circumstance, you should notify the Programme Leader that you cannot attend. Across the School an 80% attendance threshold is set. If you fall below this, you will be referred to the Student Success Team to see how we can best support your studies

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.

Aligned with the University's commitment to equality and diversity, this module supports equality of opportunity for students from all backgrounds and learning needs. Using the VLE, material will be presented electronically in formats that allow flexible access and manipulation of content. This module complies with University regulations and guidance on inclusive learning and teaching practice. This module has lab-based teaching and as such you are advised to speak to the Module Co-ordinator to ensure that specialist assistive equipment, support provision and adjustment to assessment practice can be put in place, in accordance with the University's policies and regulations.

(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**
Overall Assessment Results	☐ **Pass / Fail** ☒ **Graded**
Module Eligible for Compensation	☐ **Yes** ☒ **No** **If this module is eligible for compensation, there may be cases where compensation is not permitted due to**

	programme accreditation requirements. Please check the associated programme specification for details.
School Assessment Board	Business & Applied Computing
Moderator	Aboua Ange Kevin N'DA
External Examiner	TBC
Accreditation Details	
Module Appears in CPD catalogue	☐ **Yes** ☒ **No**
Changes / Version Number	1.1

Assessment (also refer to Assessment Outcomes Grids below)
Assessment 1
A written class test that covers the theoretical aspects of software architectures and understanding of patterns and diagrams within software engineering (50%)
Assessment 2
A portfolio coursework that demonstrates a student's proficiency of working as a member of a development team to using version control and implementing security and privacy concerns in a software engineering setting. (50%)
Assessment 3
(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.)

Component 1							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Class Test (Written)	☒	☒	☒	☐	☐	30	2

Component 2							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Portfolio of practical work	☐	☐	☒	☒	☐	40	2

Component 3							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Summative	☐	☒	☒	☒	☐	30	

Combined total for all components	100%	4 hours

Change Control

What	When	Who
Attendance and EDI updates	17/01/2025	L Cunningham
Updates for first delivery	19/02/2025	Santiago Matalonga