Module Descriptor

Title	GA - Software Engineering		
Session	2025/26	**Status**	Published
Code	GRLA08002	**SCQF Level**	8
Credit Points	40	**ECTS (European Credit Transfer Scheme)**	20
School	**Computing, Engineering and Physical Sciences**		
Module Co-ordinator	Santiago Matalonga		

Summary of Module

The module aims to increase a student's awareness of the business issues associated with the analysis, evaluation, justification and provision of technology-based organisational information systems. The module places the key activity of requirements analysis for the development of an ITbased business system into context with regards to the overall business organisation and strategy.

The first part of the module focusses on the analysis phase of the software development lifecycle. The Unified Modelling Language (UML) is the object-oriented notation used. Object-oriented analysis and object-oriented design concepts are differentiated and appropriate UML diagrams are applied to describe the detailed architecture of a software system. Emphasis is placed on the practical application of these techniques via the application of case studies used throughout the module. Computer Aided Software Engineering (CASE) tool is used to design the diagrams produced.

The second part of the module focusses on implementing the classes and class relationships from the UML diagrams using a suitable object-oriented programming language.

Module Delivery Method	**On-Campus[1]**	**Hybrid[2]**	**Online[3]**	**Work -Based Learning[4]**
	☒	☐	☐	☐

[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

Campuses for Module Delivery	☐ Ayr ☐ Dumfries		☒ Lanarkshire ☐ London ☐ Paisley		☐ Online / Distance Learning ☐ Other (specify)	
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	apply UML to specify a software system
L2	produce an analysis report using standard business software and CASE tools
L3	work as a member of a development team
L4	develop an application to maintain a collection of objects
L5	implement the components from UML with object collections being maintained using a data structure

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** Understanding the process of software development. Understanding the role of analysis within software development. Understanding object oriented concepts and their implementation in an object-oriented programming language.
Practice: Applied Knowledge and Understanding	**SCQF 8** Using a number of object oriented techniques to provide a specification of the system. Designing a program while displaying development of data abstraction and algorithmic design. Implementing a program while displaying development of data abstraction and algorithmic design.
Generic Cognitive skills	**SCQF 8** Assessing the strengths and weaknesses of the techniques used
Communication, ICT and Numeracy Skills	**SCQF 8** Using an appropriate CASE tool to maintain UML deliverables Using an appropriate IDE (Integrated Development Environment) to create an application in an object-oriented programming language.
Autonomy, Accountability and Working with Others	**SCQF 8** Working within a group to a set deadline.

Prerequisites	**Module Code**	**Module Title**
	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. Each individual topic will be the focus for a face-to-face workshop session. The topic will be introduced via a presentation incorporating practical exercises to reinforce the topic material. Students will have both individual and group-based exercises. Students will be expected to submit their solutions to these exercises on a timely basis to allow for feedback (formative assessment). Online support will be provided via the Moodle Virtual Learning Environment.	
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	30
Laboratory / Practical Demonstration / Workshop	30
Asynchronous Class Activity	80
Independent Study	200
Personal Development Plan	60
Please select	
TOTAL	400

Indicative Resources
The following materials form essential underpinning for the module content and ultimately for the learning outcomes: Sarnath Ramnath (2011), Object-Oriented Analysis and Design, Springer, C. Thomas Wu (2016), An introduction to Object-Oriented Programming in Java, McGraw-Hill
(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	TBC
External Examiner	A Jindal
Accreditation Details	
Module Appears in CPD catalogue	☐ **Yes** ☒ **No**
Changes / Version Number	1.4

Assessment (also refer to Assessment Outcomes Grids below)
Assessment 1
Case Study
Assessment 2
Practical Skills Assessment
Assessment 3
Case Study
(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**
Case Study	☒	☒	☒	☐	☐	50	0

Component 2							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Class Test (practical)	☐	☐	☐	☒	☐	20	3

Component 3							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Case Study	☐	☐	☐	☐	☒	30	0
Combined total for all components						100%	3 hours

Change Control

What	When	Who
Attendance and Engagement, EDI and External Examiner updated	22/02/2025	A Adamson