Undergraduate Programme Specification

Session	2024/25	**Last Modified**	23/06/2025
Named Award Title	BSc (Hons) Data, AI and Software Engineering		
Award Title for Each Award	Cert HE Data, AI and Software Engineering Dip HE Data, AI and Software Engineering BSc Data, AI and Software Engineering BSc (Hons) Data, AI and Software Engineering		
Date of Approval	30/05/2025		
Details of Cohort Applies to	Any new students entering at L7 and L9 in Session 2024/2025. Any continuing L8 students from Session 2024/25 continuing to L9 in 2025/2026 Any new students entering any level in 2025/2026 onwards.		
Awarding Institution	University of the West of Scotland	**Teaching Institution(s)**	University of the West of Scotland
Language of Instruction & Examination		English	
Award Accredited by		British Computer Society (re-accreditation is scheduled for 2025)	
Maximum Period of Registration		6 years full-time. Please note that part-time students wishing BCS Accreditation must complete the course within 6 years.	
Duration of Study			
Full-time	4 Years	**Part-time**	n/a
Placement (compulsory)	n/a		
Mode of Study	☒ Full-time ☐ Part-time		
Campus	☐ Ayr ☐ Dumfries	☒ Lanarkshire ☐ London ☐ Paisley	☒ Online / Distance Learning ☐ Other (specify)
School	**Computing, Engineering and Physical Sciences**		
Divisional Programme Board	**Computing**		

Programme Leader	Dr Jacob Koenig

Admissions Criteria
Candidates must be able to satisfy the general admission requirements of the University of the West of Scotland as specified in Chapter 2 of the University Regulatory Framework together with the following programme requirements:

SQA National Qualifications:

Grades BCCC (90 UCAS Tariff Points) at Higher, Maths and English at least at National 5.

Or GCE
Grades CCD at A-level, Maths and English at least at GCSE

Or SQA National Qualifications / Edexcel Foundation
An appropriate Foundation Apprenticeship, Modern Apprenticeship or HNC/D award with the level of entry and/or credit awarded being subject to the content of the programme.

Other Required Qualifications/Experience
Applicants may also be considered with other academic, vocational or professional qualifications deemed to be equivalent.

Considering the relevance of the programme to industry, applicants can apply for admission based on Accreditation of Prior Learning / Accreditation of Prior Experiential Learning in accordance with the University's RPL guidelines.

Further desirable skills pre-application
Essential requirements for entry to this programme are that the applicant is employed and has the right to live and work in Scotland.

General Overview
This Graduate Apprenticeship (GA) in Data, AI and Software Engineering is a Work-Based Learning programme developed in collaboration with industry partners, the education sector, and Skills Development Scotland (SDS). It ensures that graduate learning is fully aligned with current and emerging industry needs in data science, artificial intelligence, and software engineering.

This Graduate Apprenticeship offers an alternative route into degree-level study for individuals who are currently employed or who wish to enter the workforce directly from school. Apprentices gain advanced academic knowledge and industry-recognised skills, enabling them to grow as professionals in a rapidly evolving digital landscape. For employers, the programme provides a strategic opportunity to invest in their workforce, supporting staff to develop expertise aligned with industry and professional standards. Apprentices are able to apply their academic learning directly to real-world challenges in the workplace.

The programme is based on the Graduate Apprenticeships Framework document for IT: Software Development at SCQF level 10 produced by SDS, and puts a specific focus on the high-demand areas of data science, artificial intelligence, and software engineering.

This GA enables both employers and employees to upskill while working, leading to an Honours degree.

Graduates of the programme will be equipped with a strong foundation in software engineering, data skills and artificial intelligence, along with practical experience in building and deploying modern digital systems. As the boundaries between data, AI, and software engineering continue to converge in industry, this integrated skill set prepares graduates for a wide range of roles, including data scientists, software engineers, machine learning engineers, cloud solutions architects, DevOps engineers, and more.

The programme is designed to fully embrace the principles of Work-Based Learning. It is delivered over four years, with apprentices undertaking 120 credits each academic year, integrating academic study with practical, on-the-job experience.

Typical Delivery Method

Recognising the diverse nature of the apprentices on this programme and locations that apprentice's employers are being based, the typical programme delivery will follow a distance delivery approach, with optional on-campus sessions being offered to students each term - given sufficient demand is there. Students have the flexibility to attend those optional on-campus sessions at key points throughout the term while also having the option for remote participation when necessary.

Any additional costs

n/a

Graduate Attributes, Employability & Personal Development Planning

The apprentices on this programme will all be in relevant employment therefore the programme will build on their existing employability skills.

The Graduate Apprentices (GAs) will be productive members of their companies from an early stage. Their learning will be embedded with their workplace activities and their learning and skills are applied in a professional environment right from day one.

As the GA progresses through the programme they will gain a higher level of understanding of academic learning in a workplace environment. Their learning will be applied to their workplace environment rather than theoretical or artificial.

The programme builds a strong foundation in programming and software engineering before allowing apprentices to specialise in high-demand areas like cloud computing, data science, or AI, equipping them to develop software, data, or AI solutions.

The UWS graduate attributes are engrained throughout this programme.
As a UWS graduate, you will be:
- Universal: with globally relevant skills in data, AI, and software developpment and engineering.
- Work-ready: equipped to thrive in fast-paced, tech-driven environments.
- Successful: with a strong foundation for lifelong learning and career growth.

You will develop attributes across three dimensions:
- Academic: Deep knowledge of topics such as programming, data science, AI, and software engineering, with the ability to apply theory in real-world contexts.
- Personal: Adaptability, ethical awareness and a growth mindset, with the confidence to solve complex problems and reflect on your own development.
- Professional: Strong communication, teamwork, and leadership skills, with immediate workplace impact and long-term career potential.

Every apprentice will have an academic tutor and workplace mentor to support them. The apprentice will have regular meetings with their academic tutor and mentor to discuss their progress including issues relating to Personal Development Planning (PDP) as well as their development goals and aspirations.

A key component that supports students in their PDP in this programme is the Individual Learning Plan (ILP). This core document, retained by the apprentice and the programme leader, supports apprentices in planning, recording, and reflecting on their academic and workplace learning throughout each academic year. It ensures alignment between their job role, academic objectives, and personal aspirations. The ILP is a requirement, as stipulated by the SDS Graduate Apprenticeship Framework. It provides a structured approach to identifying how workplace activities contribute to academic progress and vice versa. Work-Based Learning (WBL) modules at each level will use the ILP to guide reflection, assess development, and ensure that learning outcomes are meaningfully integrated with real-world experience. Regular updates to the ILP also help apprentices track their growth and build a comprehensive record of their development as professionals.

Work Based Learning/Placement Details

The programme embraces the principles of Work-Based Learning (WBL) throughout. There are 20 credit-based work-based learning modules in levels 7 to 9 and a 40-credit honours project module, which for GA's is based on WBL. Therefore, at each level, there is Work-Based Learning and Assessment incorporated.

Coordination of the WBL and the University delivered and assessed content will be undertaken through an Individual Learning Plan developed in partnership between the employer, the apprentice and the University each year.

Attendance and Engagement

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 programme, academic engagement equates to the following:

Students are academically engaged if they are regularly attending and participating in timetabled teaching sessions, asynchronous online learning activities, and course-related learning resources, and complete assessments and submit these on time. Students are also required to be in regular contact with their academic tutor, regularly engage with materials and discussions on the learning platform and engage in independent study.

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 programme 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.

Module Co-ordinators will ensure that language is inclusive and culturally sensitive within any university-created material. However, some external resources, such as textbooks or websites, may still contain outdated or non-inclusive terminology, and students will be made aware of this.

The programme complies with University regulations and guidance on inclusive learning and teaching practice. In all cases you are advised to speak to the relevant 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.

Module Co-ordinators will ensure that teaching resources support the mode of delivery for all modules. For lab-based modules that follow blended delivery, in lieu of accessing physical devices or hardware, emulators and suitable virtual software will be made available, ensuring that all students have access to the necessary tools and resources.

Programme structures and requirements, SCQF level, term, module name and code, credits and awards (Chapter 1, Regulatory Framework)

Learning Outcomes

SCQF LEVEL 7 Learning Outcomes	
Knowledge and Understanding	
A1	Describe and explain the dynamic nature of the software engineering sector.
A2	Define and discuss the key areas, concepts and principles of software development as applied to the workplace.
A3	Identify and describe the principles of structured programming in a current programming language.
A4	Describe and explain the standard mathematical and statistical concepts used in computing.
A5	Identify and explain the key aspects of database theory
Practice - Applied Knowledge and Understanding	
B1	Develop computing applications by applying knowledge and understanding of the principles and techniques of structured programming.
B2	Develop, annotate, and execute programs and software using an appropriate code editor.
B3	Employ the professional skills, techniques, practices and/or materials associated with software development in the context of the workplace.
B4	Analyse a new or existing system and design and implement a database to better meet the requirements.
B5	Utilise a database to store and retrieve information effectively.
Communication, ICT and Numeracy Skills	
C1	Communicate complex ideas both verbally and in writing and present and evaluate coherent arguments, information and ideas in a clear and appropriate manner.
C2	Employ a range of approaches to addressing defined and/or routine problems and issues in software development in the workplace.
C3	Reflect on the experience of applying their knowledge and understanding of the software development sector in a workplace environment.
C4	Select and use appropriate routine and advanced ICT applications to process a variety of information and data.
C5	Utilise a database to store and retrieve information effectively.
Generic Cognitive Skills - Problem Solving, Analysis, Evaluation	
D1	Coherently present and evaluate arguments, information and ideas.
D2	
D3	
D4	
D5	

Autonomy, Accountability and Working with Others	
E1	Define and explain key issues in relation to the accountability and responsibilities of computer professionals to clients, the community, and society at large.
E2	Manage limited resources within defined areas of computing work.
E3	Take account of own and others' roles and responsibilities in carrying out and evaluating computing tasks in the workplace.
E4	Define and explain key issues in relation to professionalism in their work, and be accountable to their clients, the community, and society at large.
E5	

Level 7 Modules

CORE

SCQF Level	Module Code	Module Title	Credit	Term			Footnotes
				1	2	3	
7	COMP07027	Introduction to Programming	20	☒	☐	☐	
7	MATH07012	Applied Mathematics for Computing	10	☒	☐	☐	
7	COMP07086	Fundamentals of Computing Systems	10	☒	☐	☐	
7	COMP07009	Introduction to Web Development	20	☐	☒	☐	
7	COMP07087	Introduction to Software Engineering	20	☐	☒	☐	
7	COMP07088	Database Systems	20	☐	☐	☒	
7	WRKB07002	GA Work-Based Project 1	20	☐	☐	☒	
Footnotes for Core Modules							

Level 7 Modules

OPTION

SCQF Level	Module Code	Module Title	Credit	Term			Footnotes
				1	2	3	
				☐	☐	☐	
				☐	☐	☐	
				☐	☐	☐	
				☐	☐	☐	
				☐	☐	☐	
				☐	☐	☐	
Footnotes for Option Modules							

Level 7
Criteria for Progression and Award
Please refer to UWS Regulatory Framework for related regulations

Standard UWS progression regulations will apply.

Students who achieve 120 credits at SCQF level 7, including the core modules above, will be eligible for the exit award - Certificate of Higher Education (Cert HE) in Data, AI and Software Engineering.

Students who achieve 120 credits at SCQF level 7, but do not achieve all the core credits for the programme may be eligible for the Certificate of Higher Education (Cert HE) in IT

SCQF LEVEL 8 Learning Outcomes	
Knowledge and Understanding	
A1	Define and explain the concepts and principles of the object-oriented paradigm in the development of computing applications.
A2	Identify and explain the importance of data abstraction and the role this plays in computing.
A3	Demonstrate an intellectual understanding of, and an appreciation for, the central role of algorithms and data structures, and work with a variety of them.
A4	
A5	
Practice - Applied Knowledge and Understanding	
B1	Analyse the extent to which a proposed or existing computer-based application meets the criteria defined for its intended use.
B2	Use a range of routine and advanced skills, techniques and practices to develop software.
B3	Compile, execute, debug and document software using a current Integrated Development Environment (IDE).
B4	
B5	
Communication, ICT and Numeracy Skills	
C1	Present a reasoned and evidence-based proposal for a computer-based solution to meet an identified need in the workplace.
C2	Employ routine and specialised software development skills. For example, use a range of standard applications to process and obtain data.
C3	
C4	
C5	
Generic Cognitive Skills - Problem Solving, Analysis, Evaluation	
D1	Employ a range of approaches to formulate evidence-based solutions/ responses to defined and/or routine problems/issues associated with the workplace.
D2	Critically evaluate and analyse evidence-based solutions/responses to defined and/or routine problems/ issues associated with the workplace.
D3	
D4	
D5	
Autonomy, Accountability and Working with Others	
E1	Work as a member of a team, taking account of own and others' roles, responsibilities and contributions in carrying out and evaluating tasks as a student and an employee.
E2	Manage resources within defined areas of work as agreed by Workplace Mentor.

E3	Deal with ethical and professional issues in accordance with current professional and/or ethical codes or practices in the discipline of computing under guidance.
E4	Identify and apply current professional and/or ethical codes or practices in the discipline of computing under guidance from Workplace Mentor.
E5	

Level 8 Modules

CORE

SCQF Level	Module Code	Module Title	Credit	Term			Footnotes
				1	2	3	
8	COMP08103	Intermediate Programming	20	☒	☐	☐	
8	COMP08104	Introduction to Network and Cloud Computing	20	☒	☐	☐	
8	COMP08105	Software Engineering Practice	20	☐	☒	☐	
8	COMP08106	Data Structures & Algorithms	20	☐	☒	☐	
8	COMP08107	Embedded Systems	20	☐	☐	☒	
8	WRKB08003	GA – Work-Based Project 2	20	☐	☐	☒	
Footnotes for Core Modules							

Level 8 Modules

OPTION

SCQF Level	Module Code	Module Title	Credit	Term			Footnotes
				1	2	3	
				☐	☐	☐	
				☐	☐	☐	
				☐	☐	☐	
				☐	☐	☐	
				☐	☐	☐	
				☐	☐	☐	
Footnotes for Option Modules							

Level 8
Criteria for Progression and Award
Please refer to UWS Regulatory Framework for related regulations

Standard UWS progression rules will apply.

Students who have achieved 240 credits, at least 90 credits at SCQF-8 comprising the core modules above, will be eligible for the exit award: Diploma of Higher Education (Dip HE) in Data, AI and Software Engineering.

Students who achieve 240 credits, at least 90 credits at SCQF-8 or above, but do not achieve all the core credits for the programme may be eligible for the Diploma of Higher Education (DipHE) in IT.

Distinction will be awarded in line with University Regulations 3.25 & 3.26.

SCQF LEVEL 9 Learning Outcomes (Maximum of 5 per heading)	
Knowledge and Understanding	
A1	Demonstrate a critical understanding of relevant data, AI and software engineering principles and practice.
A2	Demonstrate a critical understanding of the scope, main areas and boundaries of the studied computing theme(s).
A3	Analyse theories, principles, concepts and terminology associated with software development data or AI applicable to the individual's workplace.
A4	Demonstrate a critical understanding of various steps and procedures within the data science lifecycle
A5	
Practice - Applied Knowledge and Understanding	
B1	Apply project management techniques to control and monitor a software, data, AI or IT project in the workplace.
B2	Practise routine methods of enquiry and research associated with one or more branches of computing.
B3	Apply the principal skills, techniques, practices and/or materials associated with the computing theme(s) studied.
B4	Practise routine methods of enquiry and/or research associated with software development.
B5	
Communication, ICT and Numeracy Skills	
C1	Use a range of software tools to support development techniques of data, AI and software solutions and project management in the workplace.
C2	
C3	
C4	
C5	
Generic Cognitive Skills - Problem Solving, Analysis, Evaluation	
D1	Understand and apply a range of computing concepts, principles and practices in the context of well specified scenarios, exercising judgement in the selection of tools and techniques.
D2	Draw on a range of sources in making judgements.
D3	
D4	
D5	
Autonomy, Accountability and Working with Others	
E1	Recognise and deal with the professional, economic, social, environmental, moral and ethical issues involved in the sustainable exploitation of computer technology, and be guided by the adoption of appropriate professional, ethical and legal practices in the workplace.

E2	Use initiative in managing ethical and professional issues in accordance with current professional and/or ethical codes or practices, seeking guidance where appropriate from workplace Mentor.
E3	
E4	
E5	

Level 9 Modules

CORE

SCQF Level	Module Code	Module Title	Credit	Term			Footnotes
				1	2	3	
9	COMP09118	Fundamentals of Data Science	20	☒	☐	☐	
9	COMP09119	DevOps	20	☐	☒	☐	
9	COMP09020	Internet Scripting	20	☐	☒	☐	
9	WRKB09003	GA – Work-Based Project 3	20	☐	☐	☐	
9	COMP09092	Research Methods in Computing	1 0	☐	☐	☒	
9	COMP09093	Professional Computing Practice	10	☐	☐	☒	
Footnotes for Core Modules							

Level 9 Modules

OPTION

SCQF Level	Module Code	Module Title	Credit	Term			Footnotes
				1	2	3	
9	COMP09120	Cloud Services and Architectures	20	☒	☐	☐	
				☐	☐	☐	
				☐	☐	☐	
				☐	☐	☐	
				☐	☐	☐	
				☐	☐	☐	
Footnotes for Option Modules Select One module (20 credits) from the list above OR other modules in consultation with the Programme Leader.							

Level 9 **Criteria for Progression and Award** ***Please refer to UWS Regulatory Framework for related regulations***
Standard UWS progression regulations will apply.

Students who have completed 360 credit points, of which a minimum of 90 are at SCQF level 9 or above, including the core modules above, will be eligible for the award: Bachelor of Science (BSc) in Data, AI and Software Engineering.

Students who achieve 360 credit points, of which a minimum of 90 are at SCQF level 9 or above, but do not achieve all the core credits for the programme may be eligible for the Bachelor of Science (BSc) in IT.

Distinction will be awarded in line with University Regulations 3.25 & 3.26.

SCQF LEVEL 10 Learning Outcomes (Maximum of 5 per heading**)**	
Knowledge and Understanding	
A1	Demonstrate and work with a knowledge that covers and integrates most of the principal areas, features, boundaries, terminology and conventions within software development.
A2	Demonstrate a critical understanding of the principal theories, concepts and principles conventions within the selected theme(s) of study, some of which are informed by or at the forefront of the selected theme(s) of study.
A3	Demonstrate knowledge and understanding of data, AI and software development including a range of established techniques of enquiry or research methodologies.
A4	
A5	
Practice - Applied Knowledge and Understanding	
B1	Execute a defined project of research, development or investigation within computing and identify and implement relevant outcomes.
B2	Critically review and assess contributions to the research literature of the field of study
B3	Use a range of the principal skills, practices and/or materials associated within the selected theme(s) of study in a project linked to the workplace.
B4	Use and integrate skills, practices and/or materials which are specialised, advanced, or at the forefront of data, ai and software engineering.
B5	
Communication, ICT and Numeracy Skills	
C1	Deliver a coherent and reflective presentation of an extended piece of project work to an informed audience.
C2	Produce a critical and evaluative written report of a development project.
C3	Use a wide range of routine and specialised skills in support of established practices within the selected theme(s) of study - for example: -make formal presentations about specialised topics to informed audiences

	- use a range of software to support and enhance work at this level and specify refinements/ improvements to software to increase effectiveness, - interpret, use and evaluate a range of numerical and graphical data to set and achieve goals/ targets
C4	
C5	
Generic Cognitive Skills - Problem Solving, Analysis, Evaluation	
D1	Critically analyse and apply a range of computing concepts, principles and practices in the context of loosely defined problems where information is limited and/or comes from a range of sources, exercising judgement in the selection of tools and techniques.
D2	Critically review and consolidate knowledge, skills and practices and thinking within the selected theme(s) of study.
D3	Demonstrate originality and creativity in dealing with professional level computing issues.
D4	
D5	
Autonomy, Accountability and Working with Others	
E1	Practise in ways which show a clear awareness of own and others' roles and responsibilities in the workplace.
E2	Deal with complex ethical and professional issues in accordance with current professional and/or ethical codes or practices in the workplace.
E3	
E4	
E5	

Level 10 Modules

CORE

SCQF Level	Module Code	Module Title	Credit	Term			Footnotes
				1	2	3	
10	COMP10034	Computing Honours Project	40	☐	☐	☒	
10	COMP10085	Data Engineering	20	☒	☐	☐	
				☐	☐	☐	
				☐	☐	☐	
				☐	☐	☐	
				☐	☐	☐	
Footnotes for Core Modules							

Level 10 Modules

OPTION

		Module Title	Credit	Term	Footnotes

SCQF Level	Module Code			1	2	3	
10	COMP10086	Artificial Intelligence Applications		☒	☐	☐	
10	COMP10087	Big Data		☐	☒	☐	
10	COMP10088	Advanced Machine Learning		☐	☒	☐	
10	COMP10089	Modern Web Development		☐	☒	☐	
10	COMP10066	HCI & User Experience Design (UXD)		☒	☐	☐	
10	COMP10068	Secure Programming		☐	☒	☐	

Footnotes for Option Modules

Select THREE modules (60 credits) from the list above OR other modules in consultation with the Programme Leader.

Level 10
Criteria for Award
Please refer to UWS Regulatory Framework for related regulations

Students who have completed 480 credit points of which a minimum of 90 are at SCQF level 10 or above, including core modules as outlined above, will be eligible for the award: BSc (Hons) Data, AI and Software Engineering.

Students who achieve 480 credits, of which a minimum of 90 are at SCQF level 10 or above, but do not achieve all the core credits for the programme may be eligible for the BSc (Hons) in IT.

Regulations of Assessment

Candidates will be bound by the general assessment regulations of the University as specified in the University Regulatory Framework.

An overview of the assessment details is provided in the Student Handbook and the assessment criteria for each module is provided in the module descriptor which forms part of the module pack issued to students. For further details on assessment please refer to Chapter 3 of the Regulatory Framework.

To qualify for an award of the University, students must complete all the programme requirements and must meet the credit minima detailed in Chapter 1 of the Regulatory Framework.

Combined Studies

There may be instances where a student has been unsuccessful in meeting the award criteria for the named award and for other more generic named awards existing within the School. Provided that they have met the credit requirements in line with the SCQF credit minima

(please see Regulation 1.21), they will be eligible for a Combined Studies award (please see Regulation 1.61). For students studying BA, BAcc, or BD awards the award will be BA Combined Studies. For students studying BEng or BSc awards, the award will be BSc Combined Studies.

Version no: 1

Change/Version Control

What	When	Who