University of the West of Scotland

Undergraduate Programme Specification

Session: 2024/25

Last modified: 02/09/2024
Status: Proposal

Named Award Title:	**BSc (Hons) Computing Science (Sandwich Available) Single**
Award Title for Each Award:	**BSc (Hons) Computing Science (Sandwich Available)** **BSc Computing Science (Sandwich Available)** **Dip HE Computing Science** **Cert HE Computing Science**
Date of Validation:	March 2019
Details of Cohorts Applies to:	All students entering or progressing on the programme from September 2024
Awarding Institution/Body:	University of the West of Scotland
Teaching Institution:	University of the West of Scotland
Language of Instruction & Examination:	English
Award Accredited By:	British Computer Society (Lanarkshire & Paisley campuses)
Maximum Period of Registration:	6 years full-time, 8 years part-time. Please note that part-time students wishing BCS Accreditation must complete the course within 6 years.
Mode of Study:	Full Time Part Time
Campus:	Dumfries Lanarkshire Paisley
School:	School of Computing, Engineering and Physical Sciences
Programme Board	Computing
Programme Leader:	Graham Parsonage

Admission 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

Standard Entry Requirements: BCCC (90 UCAS Tariff points) including Higher Maths OR Computing Science OR equivalent.

Minimum Entry Requirements: CCCC (84 UCAS Tariff points) including Higher Maths OR Computing Science OR equivalent.

Also including Maths and English at least at Intermediate 2 / National 5.

or GCE

A Levels: BBC (112 UCAS Tariff points) including Maths OR Computing Science OR equivalent (112 UCAS Tariff points). Also Maths and English at least at GCSE.

or SQA National Qualifications/Edexcel Foundation

An appropriate HNC/HND award.

Year 2 entry with an HNC with an 'B' in the Graded Unit.

Year 3 entry with at least a 'B' in the Graded Unit.

The level of entry and/or credit awarded being subject to the content of the HN programme.

Other Required Qualifications/Experience

Applicants may also be considered with other academic, vocational or professional qualifications deemed to be equivalent.

Further desirable skills pre-application

General Overview

The Computing Science programme provides students with the knowledge, understanding and skills required to be a successful professional in a wide variety of computing careers.

Students who graduate with an honours degree will be eligible to proceed to advanced masters programmes in computing or to undertake research via MPhil/PhD.

The approach adopted within the programme to teaching, learning and assessment incorporates a blended learning style promoting the objectives of the School's eLearning strategy. Learning is supported by use of the Virtual Learning Environment. As well as allowing staff to provide resources online for students such as lecture notes, online quizzes etc., the VLE is used extensively to communicate with students: via email e.g. to provide individual feedback for both formative and summative assessment purposes; via discussion boards to supplement tutorials; and via an electronic notice board to convey module administration information. Staff also make use of the VLE to allow students to electronically submit assignments, thus allowing both staff and students to make use of software tools such as Turnitin to check for plagiarism. Formal contact with students is via lectures, tutorials and laboratory work. Classes are divided into smaller groups for laboratory work and tutorials. Seminars and group work are used where appropriate. Throughout the programme these provide the opportunity to demonstrate the application of the theoretical concepts presented in the lectures, and for students to practice such application in given scenarios. At levels 9 and 10, in particular, these also provide the forum where assumptions and issues in the theory and its application are explored. The teaching of programming is largely based on practice, where students learn through problem solving, developing algorithms, and writing and testing code to produce working solutions to problems which become more challenging at each level of the programme.

Most modules have either one or two assessment categories. The development of analytical and problem solving skills and the application of theory to practice are essential features of the programme and so from the very beginning of the programme there is a high emphasis on in-course assessments. Modules in which artefacts are developed often ask for a sequence of assessed deliverables, rather than a single overall submission at the end of the module, to allow for formative feedback on earlier implementation phases before later phases are completed. Class tests are used to allow feedback on the students' grasp of concepts and principles in the modules during the term.

Students have the opportunity to take a 40 credit Placement Learning module at L9 and/or a Sandwich Placement (minimum 36 weeks), with an approved employer, either between levels 8 and 9 or between levels 9 and 10. The latter option is available if the student commits to returning for the honours year after their placement. Further details of these are given in section 29 below.

Graduate Attributes, Employability & Personal Development Planning

Graduates of the programme will be **U**niversal, **W**ork-ready and **S**uccessful across the three dimensions, academic, personal and professional which encapsulate the breadth of the learning experience at University level. The programme aims to develop the student's intellectual and imaginative capabilities, professional understanding and judgement, problem-solving and communications skills, and ability to work as an effective team member. The programme offers a thorough grounding in the principles of computer operation, including programming, and associated software engineering approaches and develops the lifelong learning skills that students will need to stay abreast of the rapidly evolving technologies in computing and its related disciplines.

The University's ASPIRE (Academic, Social and Professional skills for Innovation, Reflection and Endeavour) curriculum supports our students and offers them a tailored approach to their academic, professional and personal development.

Year Leaders are identified as personal tutors for each student and students are expected to meet their personal tutors on a regular basis, at least once per term, to discuss issues relating to personal and professional development including academic progress, development goals and aspirations.

Sandwich Year (either after 2nd year or after 3rd year)

The employability skills and attributes which students will gain experience in developing, applying and reflecting upon during the sandwich placement will be those identified by The Council For Industry and Higher Education (CIHE) (2006) as the key competencies which employers value as defined below:

Cognitive skills (attention to detail, analysis and judgment)

- Demonstrate the use of their knowledge, understanding and skills, in both identifying and analysing problems and issues and formulating, evaluating and applying evidence-based solutions and
- arguments.
- Undertake critical analysis, evaluation and/or synthesis of ideas, concepts information and issues
- Identify and analyse routine professional problems and issues

  Draw on a range of sources in making judgments

Generic competencies (planning & organisation, influencing, written communication, questioning, listening, teamworking, interpersonal sensitivity, organisational sensitivity and lifelong learning and development)

- Well developed skills for the gathering, evaluation, analysis and presentation of information, ideas, concepts and quantitative and/or qualitative data, drawing on a wide range of current sources. This will include the use of ICT as appropriate to the subject(s).
- Communication of the results of their own and other work accurately and reliably in a range of different contexts using the main specialist concepts, constructs and techniques of the subject(s);
- Identifying and addressing their own learning needs including being able to draw on a range of current research, development and professional materials;
- Interpreting, using and evaluating numerical and graphical data to achieve goals targets
- Making formal and informal presentations on standard/mainstream topics in the subject/discipline to a range of audiences
- Work under guidance with qualified practitioners
- Practice in ways which take account of own and others' roles and responsibilities
- Take some responsibility for the work or others and for a range of resources

Personal capabilities (creativity, decisiveness, initiative, adaptability/flexibility, achievement orientation, tolerance for stress and leadership)

- Application of their subject and transferable skills to contexts where criteria for decisions and the scope of the task may be well defined but where personal responsibility, initiative and decision-making is also required.
- Exercising autonomy and initiative in some activities at a professional level

Technical ability (knowledge of key trends in modern technology and experience of using modern technology)

- Use of a range of IT applications to support and enhance work

  Practical and professional elements (professional expertise, process operation and image)

- Show familiarity and competence in the use of routine materials, practices and skills and of a few that are more specialised, advanced and complex.
- Practise in a range of professional level contexts which include a degree of unpredictability;
- Deal with ethical and professional issues in accordance with current professional and/or ethical codes or practices, seeking guidance where appropriate

Work Based Learning/Placement Details

The programme provides students with the opportunity to take a 40 credit **Placement Learning** module in year 3 or a 36 week **Sandwich** placement between years 2 and 3 or years 3 and 4.

Placement Learning

The School has a policy of supporting short-term work related student placements in relevant computing companies. Consequently, a Placement Learning module is offered as an option within this programme at level 9 offering students the opportunity of a relevant work experience and application of learning and theory in practice. The module takes into account the University's Regulations on Work-based & Placement Learning and the QAA Code of Practice for the Assurance of Academic Quality and Standards in Higher Education Section 9: Work-based and Placement Learning 2007.

The student works in an environment that involves using computers in a way that is relevant to their programme of study in order to meet the module learning outcomes through applying their acquired, often theoretical, knowledge and skills, whilst learning new, often applied, knowledge and skills. Employment will normally be organised by the School but the student can arrange, in coordination with the lecturer responsible for delivering the module, a work placement of his/her own or, if the student is already working in an area related to their programme of study then, with the approval of the School and in agreement with their employer, they may be able to use that work experience in order to meet the learning outcomes.

Regardless of the method of identification of Placement Learning, the experience must be selected and/or approved based on the University's criteria for placement setting and will be governed by a tripartite agreement between the student, the employer and the University. This agreement will define the learning outcomes for the experience and confirm elements of support and commitment from all parties. The agreement will be signed by each party prior to commencement of the experience.

The module reflects the School's commitment to both the Employability and PDP agendas and is directly related to the professional practice skills and transferable skills.

Sandwich Placement

The sandwich placement is designed for students to gain and reflect on work experience attained during their time in the workplace. The experience may also contribute towards meeting the membership requirements of a Professional body. Students undertaking a sandwich placement are required to undertake PDP and maintain a portfolio from which they will be required to produce a comprehensive learning log report charting their development during placement. This is assessed on a pass /fail basis only with the majority of ongoing assessment being formative in nature. The student will be required, through reflection, to explore their own role within their placement organisation and to take account of the roles and responsibilities of themselves and others in the context of the structures in which they operate. On successful completion of the placement, the learner will be more employable as a result of having developed their ability to integrate essential generic skills and attributes with subject/discipline related knowledge.

The placement will be governed by a tripartite learning agreement between the student, placement provider and the University which defines the learning outcomes and confirms elements of support and commitment from all parties. The agreement will be signed by each party prior to the start of the placement and it is expected that Schools will continue to use their existing placement systems for the management of such agreements.

Learning Outcomes

At the end of the placement the student will be able to:

- **L1**.Critically relate elements of the placement work experience to the main themes and issues of academic study of computing relevant within the workplace and be confident in articulating this to others
  L2. Analyse organisational cultures and structures with particular relevance to the current workplace and exhibit the ability to critically evaluate employee roles in an applied setting.
  L3. Recognise, critically assess and be able to clearly demonstrate to others the personal development and application of essential employability skills and attributes within a real work situation.

Assessment

Assessment will be based on pass/fail only and all assessment elements must be passed for progression as part of the Sandwich programme. Assignments will be open to external examination in accordance with University regulations.

In order to submit for assessment students need to:

- Attend the workplace(s) in which they have been placed for a minimum total of 36 weeks (180 full working days) and have their employer(s) confirm their attendance
- Receive a satisfactory assessment of work performance from their workplace supervisor(s) and academic tutor (based on two interviews and other evidence as required)

Maintain a PDP portfolio and use this to submit a satisfactory learning log report reflecting on the placement experience (minimum 2,000 words)

Successfully complete a subject related project (minimum 3,000 words or equivalent)

Where a student's sandwich placement is made up of two separate planned periods of work experience (i.e. a

"Thin Sandwich"), the PDP portfolio report and subject related report will normally be submitted and assessed

during the second period of placement. Assessment of the first period of placement will relate to satisfactory performance in the workplace.

Mitigating circumstances will be taken into consideration in accordance with University regulations.

Reassessment

- Minimum period in work: It is essential that the student completes at least 36 weeks (180 working days) in employment. If the student does not meet this minimum requirement then they cannot pass the
- placement. Catch up: Where through no fault of their own a student has been unable to attain at least 36 weeks placement experience they will be entitled to secure the additional work experience required through a suitable additional period of work experience provided this is agreed in advance with the Programme Team.
- Retake of Placement: a repeat or alternative placement will only be considered on health or other mitigating grounds or where the placement is terminated due to no fault of the student. In such cases the student will receive counselling from the placement tutor on how best to proceed.
- Satisfactory Performance: The first interview will be used to assess the student's progress. If it is considered that the student's performance is less than expected at that stage, the student will be advised of this and of the elements of their performance that need to improve. If the student's performance is assessed as unsatisfactory at the second interview then the student will be given further advice on the steps they need to take to achieve a satisfactory assessment and will be reassessed through a third interview at the end of their placement period. Interviews will normally be conducted within the workplace unless a suitable alternative method is agreed by all parties.
- Reflective Report from PDP: If the reflective report is unsatisfactory, the student will be given the opportunity to resubmit in line with University regulations
- Subject related report: If the subject related report is unsatisfactory the student will be given the opportunity to resubmit in line with University regulations

Progression/Award

- Placement students will be assigned to a specific Subject and Programme Panel.
- The relevant Programme Panel will consider the performance of each sandwich placement student enrolled on that Programme and decide eligibility for reassessment, progression and awards in accordance with University Regulations, in particular Regulation 7.10.4
- A student who fails the sandwich placement after reassessment will no longer be eligible for a "with sandwich" award. They will either progress to level 9 or 10 (as appropriate) of a non-sandwich equivalent programme or exit with an equivalent non-sandwich award.

Engagement

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.

Where a programme has Professional, Statutory or Regulatory Body requirements these will be listed here:

The engagement and attendance requirements of individual modules are detailed in the module descriptors.

Equality and Diversity

The University's Equality, Diversity and Human Rights Procedure can be accessed at the following link: UWS Equality and Diversity Policy

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

A. Learning Outcomes (Maximum of 5 per heading)

Outcomes should incorporate those applicable in the relevant QAA Benchmark statements

Knowledge and Understanding

A1	Demonstrate an understanding of computing science as an evolving discipline.
A2	Demonstrate knowledge and understanding of the principles of structured programming and the use of simple data types in a modern programming language.
A3	Demonstrate an understanding of the basic principles and techniques of web development.
A4	Demonstrate an understanding of the internal structure and operation of computer systems.

Practice - Applied Knowledge and Understanding

B1	Apply programming principles and techniques in the development of small computing applications.
B2	Use a modern program development environment and demonstrate familiarity with the tools it provides to compile, execute, debug and document the software.
B3	Develop and publish a web site using a range of technologies.
B4	Use the professional skills, techniques, practices and/or materials associated with computing.

Communication, ICT and Numeracy Skills

C1	Demonstrate the ability to communicate ideas both verbally and in writing.
C2	Present and evaluate arguments, information and ideas which are routine to information technology.
C3	Use a range of approaches to addressing defined and/or routine problems and issues in computing within familiar contexts
C4	Produce a reflective account of their learning and personal development planning.

Generic Cognitive Skills - Problem Solving, Analysis, Evaluation

D1	Use structured programming as an approach to solving routine computing problems.
D2	Use a range of routine skills associated with computing - for example: • convey complex ideas in well-structured and coherent form • use a range of forms of communication effectively • use standard applications to process and obtain a variety of information and data

Autonomy, Accountability and Working With Others

E1	Demonstrate in their work, and be able to give an account of, the responsibilities of computer professionals and their accountability to their 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.

Core Modules

SCQF Level	Module Code	Module Name	Credit	Term 1	Term 2	Term 3	Footnotes

SCQF Level	Module Code	Module Name	Credit	1	2	3	Footnotes
7	COMP07067	Professional Development in Computing	10	✓			
7	COMP07027	Introduction to Programming	20	✓	✓		T1 and T2
7	COMP07061	Computing Systems	20	✓			
7	COMP07009	Introduction to Web Development	20	✓			
7	COMP07012	CCNA1: Introduction to Networks	20		✓		
7	MATH07005	Maths for Computing	10		✓		

Footnotes
COMP07027 Intro to Programming is delivered over two terms.

Optional Modules

SCQF Level	Module Code	Module Name	Credit	Term 1	2	3	Footnotes
		Choose 1 module (20 credits) from the list below or other modules in consultation with Programme Leader					Campus
7	COMP07013	Design for Interaction	20		✓		P
7	COMP07075	Security Fundamentals	20		✓		L

* Indicates that module descriptor is not published.

Footnotes
Codes for campuses:
L = Lanarkshire
P = Paisley

Criteria for Progression and Award

Standard UWS progression regulations will apply.

Students who achieve 120 credits at SCQF level 7 or above, including the core modules above, will be eligible for the exit award Certificate of Higher Education (Cert HE) Computing Science

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

B. Learning Outcomes (Maximum of 5 per heading)

Outcomes should incorporate those applicable in the relevant QAA Benchmark statements

Knowledge and Understanding	
A1	Demonstrate understanding of the power behind abstraction, the potential behind multiple levels of abstraction and the role this plays in computing.
A2	Demonstrate an intellectual understanding of, and an appreciation for, the central role of algorithms and data structures, and work with a variety of them.
A3	Demonstrate understanding of the concepts and principles of the object-oriented paradigm in the development of computing applications.
A4	Demonstrate a knowledge of the scope, defining features and main knowledge areas related to programming for mobile devices.
A5	Demonstrate an understanding of relational database theory.

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, practices and/or materials associated with programming and databases.
B3	Carry out routine lines of enquiry, development or investigation into professional level problems and issues associated with programming for mobile devices.
B4	Design and implement a relational database to a specification.

Communication, ICT and Numeracy Skills

C1	Present succinctly a reasoned and evidence-based case for a proposed computer-based solution to meet an identified need in a well-understood domain.
C2	Use both routine and specialised skills associated with the theme(s) of study, for example: i)use a range of standard applications to process and obtain data ii) use and evaluate numerical and graphical data to measure progress and achieve goals/targets.

Generic Cognitive Skills - Problem Solving, Analysis, Evaluation

D1	Employ algorithmic thinking in developing computing solutions to routine problems, including recursive and distributed possibilities and attention to the benefits and limitations of these.
D2	Use a range of approaches to formulate evidence-based solutions/ responses to defined and/or routine problems/issues associated with computing science area.
D3	Critically evaluate evidence-based solutions/responses to defined and/or routine problems/ issues associated with the computing science area.

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.
E2	Manage resources within defined areas of work.
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.

Core Modules

SCQF Level	Module Code	Module Name	Credit	Term 1	Term 2	Term 3	Footnotes
8	COMP08033	Object Oriented Analysis	20	✓			
8	COMP08034	Structures & Algorithms	20	✓	✓		T1 and T2
8	COMP08002	Database Development	20	✓			
8	COMP08068	Programming for Mobile Devices	20		✓		
8	COMP08053	WBL 2 - Group Project (20 point)	20		✓		

| 7 | COMP07027 | Introduction to Programming | 20 | ✓ | ✓ | | Core for Direct Entry students who do not have pre-requisite programming knowledge |

* Indicates that module descriptor is not published.

Footnotes
COMP08034 Structures & Algorithms is delivered over two terms.
COMP07027 Intro to Programming is delivered over two terms.

Optional Modules

SCQF Level	Module Code	Module Name	Credit	Term 1	Term 2	Term 3	Footnotes
		Choose at least 20 credits from the list below or other modules in consultation with Programme Leader.					Campus
8	COMP08074	Operating Systems	20	✓			L,P
7	MATH07005	Mathematics for Computing	10		✓		L,P - recommended option for direct entry students

* Indicates that module descriptor is not published.

Footnotes Codes for campuses:
L = Lanarkshire
P = Paisley

Criteria for Progression and Award

Standard UWS progression rules will apply.

Students who achieve 240 credits of which a minimum of 90 credits are at SCQF L8 or above, including the core modules above, will be eligible for the exit award Diploma of Higher Education (DipHE) in Computing Science.

Students who achieve 240 credits of which a minimum of 90 credits are at SCQF L8 or above, but do not achieve all the core modules for the award may be eligible for the Diploma of Higher Education (DipHE) in Information Technology.

C. Learning Outcomes (Maximum of 5 per heading)

Outcomes should incorporate those applicable in the relevant QAA Benchmark statements

Knowledge and Understanding	
A1	Demonstrate a broad and integrated knowledge and understanding of the scope, main areas and boundaries of computing science.
A2	Demonstrate a critical understanding of a selection of the principal theories, principles, concepts and terminology associated with computing science.

Practice - Applied Knowledge and Understanding	
B1	Practise routine methods of enquiry and/or research associated with one or more branches of computing science.

B2	Use the principal skills, techniques, practices and/or materials associated with the domain of computing science.	
B3	Plan and implement an Information Security Management policy.	

Communication, ICT and Numeracy Skills

C1	Use appropriate software tools to support development techniques and project management.

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.

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.
E2	Work as a member of a development team recognising the different roles within the team.
E3	Deal with ethical and professional issues in accordance with current professional and/or ethical codes or practices, seeking guidance where appropriate.

Core Modules

SCQF Level	Module Code	Module Name	Credit	Term 1	Term 2	Term 3	Footnotes
9	COMP09093	Professional Computing Practice	10	✓			
9	COMP09050	Database Applications	20	✓			
9	COMP09086	Information Security Management	20		✓		
9	COMP09092	Research Methods in Computing	10		✓		

* Indicates that module descriptor is not published.

Footnotes

Optional Modules

SCQF Level	Module Code	Module Name	Credit	Term 1	Term 2	Term 3	Footnotes
		Select 2/3 modules (60 credits) from the list below or other modules in consultation with the Programme Leader.					Campus
9	COMP09089	Windows Server Administration	20	✓			L, P
9	COMP09044	Algorithms & Collections	20	✓	✓		P. T1 & T2 Cannot take with COMP09075
9	COMP09024	Unix System Administration	20	✓			L, P

Level	Code	Module	Credits			Campus
9	COMP09116	CCNA: CyberOps	20		✓	L
9	COMP09007	Project Management for IT	20	✓		D, P
9	COMP09001	Business Systems Analysis	20		✓	P
9	COMP09020	Internet Scripting	20		✓	D*, L, P
9	COMP09006	Web Site Development	20	✓		D*,P
9	COMP09078	Advanced Programming for Mobile Devices	20		✓	P
8	COMP08068	Programming for Mobile Devices	20		✓	L, P. Direct entry students only. Cannot be taken with any other L8 module.
9	COMP09049	Study Project - Computing	20		✓	D, L. Cannot take with COMP09075
9	COMP09111	Systems Programming Concepts	20		✓	L
9	COMP09041	AI Programming for Games	20		✓	P
9	COMP09003	Business Intelligence (Comp)	20		✓	P
9	COMP09075	Placement Learning	40		✓	L, P. Cannot take with COMP09049
9	COMP09118	Fundamentals of Data Science	20	✓		L, P
9	COMP09119	DevOps	20	✓		L, P

* Indicates that module descriptor is not published.

Footnotes
Students who intend taking COMP09075 Placement Learning should choose 1 T1 option module.

COMP09044 Algorithms & Collections is delivered over two terms so should not be chosen with COMP09075 Placement Learning.

Codes for campuses:
D = Dumfries
L = Lanarkshire
P = Paisley

D* indicates runs alternate years in Dumfries

Criteria for Progression and Award
Either:

BSc Computing Science
or
BSc Computing Science with Sandwich

Standard UWS progression regulations will apply. In particular, students may not progress to the Honours level of the programme until they have met the requirements for BSc award.

Students who have completed 360 credits of which a minimum of 90 credits are at SCQF L9 or above, including the core modules above will be eligible for the award Bachelor of Science (BSc) in Computing Science.

Students who achieve 360 credits of which a minimum of 90 credits are at SCQF L9 or above, but do not achieve all the core credits for the programme may be eligible for the Bachelor of Science (BSc) in Information Technology.

To be eligible for the award of a sandwich degree, a candidate must have satisfied the requirements for the award of the BSc Computing Science or BSc Information Technolgy and have accumulated 36 weeks of appropriate industrial placement experience via the COMP00001 module.

D. Learning Outcomes (Maximum of 5 per heading)

Outcomes should incorporate those applicable in the relevant QAA Benchmark statements

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 the selected theme(s) of study.
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 the ways in which computing as a broad discipline is developed, including a range of established techniques of enquiry or research methodologies.

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 computing.
B3	Use a range of the principal skills, practices and/or materials associated within the selected theme(s) of study.
B4	Use skills, practices and/or materials which are specialised, advanced, or at the forefront of the selected theme(s) of study.

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.

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.

Autonomy, Accountability and Working With Others

E1	Practise in ways which show a clear awareness of own and others' roles and responsibilities.
E2	Deal with complex ethical and professional issues in accordance with current professional and/or ethical codes or practices

Core Modules

SCQF Level	Module Code	Module Name	Credit	Term 1	Term 2	Term 3	Footnotes
10	COMP10034	Computing Honours Project	40	✔	✔		

* Indicates that module descriptor is not published.

Footnotes

Optional Modules

SCQF Level	Module Code	Module Name	Credit	Term 1	Term 2	Term 3	Footnotes
		Select 80 credits (3/4 modules) from the list below OR 60 credits (2/3 modules) from the list below AND 1 module (20 credits) from the L9 options above OR other modules in consultation with the Programme Leader.					Campus
10	COMP10020	Internet Technologies	20	✔			P
10	COMP10064	Virtualisation	20	✔			P
10	COMP10013	Dynamic Web Technologies	20	✔			P
10	COMP10014	Network Security	20	✔			L, P
10	COMP10066	HCI & User Experience Design (UXD)	20	✔			D, L, P
10	COMP10082	Machine Learning for Data Analytics	20	✔			L, P
10	COMP10002	Data Warehouse Environment	20		✔		D, L, P
10	COMP10062	Decision Support Systems	20		✔		D, P
10	COMP10070	Network Management, Monitoring and Automation	20		✔		L, P
10	COMP10068	Secure Programming	20		✔		L
10	WRKB10001	WBL 4 - Industrial Project (40 Point)	40	✔	✔	✔	D, L, P (See Note 1 below)

* Indicates that module descriptor is not published.

Footnotes
Note 1:
WRKB10001 WBL4 - Industrial project is only available to students who are employed by a company who can provide a suitable industrial project.

Codes for campuses:
D = Dumfries
L = Lanarkshire
P = Paisley
Students must
also pass the
core module
COMP10034
Honours Project
**Criteria for
Award** Either:

BSc (Hons) Computing Science
or
BSc (Hons) Computing Science with Sandwich

Students who have completed 480 credits of which a minimum of 90 are at SCQF L10 or above, including the core modules as above, will be eligible for the award BSc (Hons) Computing Science.

Students who achieve 480 credits of which a minimum of 90 are at SCQF L10 or above, but do not achieve all the core credits for the programme may be eligible for the BSc (Hons) in Information Technology.

To be eligible for the award of a sandwich degree, a candidate must have satisfied the requirements for the award of the BSc (Hons) Computing Science or BSc (Hons) Information Technology and have accumulated 36 weeks of appropriate industrial placement experience.

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 an exit award of CertHE / DipHE or BA / BSc in Combined Studies.

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.

Changes

Changes made to the programme since it was last published:

University's ASPIRE module added to L7. This has required COMP07067 Prof Dev in Comp to be removed from L7. MATH07005 Maths for Comp to be replaced with MATH07002 Sequences & Patterns and COMP07012 CCNA1: Intro to Networks to moved to the options.

References to PDP have also been removed / updated.

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