Glasgow Caledonian University

**Programme Specification (and Curriculum Map)
Dept. of Computing
Full-time Undergraduate Programme**

April 2022

PROGRAMME SPECIFICATION

for the

BSc/BSc (Hons) Computing Programme

April 2022

GLASGOW CALEDONIAN UNIVERSITY   PS1

Programme Specification Pro-forma

<table>
<tr><td colspan="3">1.   GENERAL INFORMATION</td></tr>
<tr><td>1.</td><td>Programme Title:</td><td>BSc/BSc (Hons) Computing</td></tr>
<tr><td></td><td></td><td>BSc/BSc (Hons) Computing (GCU Pathways)</td></tr>
<tr><td>2.</td><td>Final Award:</td><td>BSc, BSc (Sandwich), BSc (Hons), BSc (Hons) (Sandwich)</td></tr>
<tr><td>3.</td><td>Exit Awards:</td><td>University Certificate in Computing</td></tr>
<tr><td></td><td></td><td>University Diploma in Computing</td></tr>
<tr><td>4.</td><td>Awarding Body:</td><td>Glasgow Caledonian University</td></tr>
<tr><td>5.</td><td>Approval Date:</td><td>November 2018</td></tr>
<tr><td>6.</td><td>School:</td><td>School of Computing, Engineering and Built Environment</td></tr>
<tr><td>7.</td><td>Host Division/Dept:</td><td>Department of Computing</td></tr>
<tr><td>8.</td><td>UCAS Code:</td><td>G401</td></tr>
<tr><td></td><td></td><td>G501 (GCU Pathways)</td></tr>
<tr><td>9.</td><td>PSB Involvement:</td><td>British Computer Society</td></tr>
<tr><td>10.</td><td>Place of Delivery:</td><td>City Campus</td></tr>
<tr><td>11.</td><td>Subject Benchmark Statement:</td><td>Computing</td></tr>
<tr><td>12.</td><td>Dates of PSP preparation/revision:</td><td>December 2021</td></tr>
</table>

Please Note: The information provided in this document in respect of Levels One and Two of the programme, including exit awards, is not applicable for the GCU Pathways route as Levels One and Two i.e. the HNC/D are delivered at Glasgow Clyde College. Further information on the Pathways Levels One and Two can be accessed from Glasgow Clyde College's respective course pages https://www.glasgowclyde.ac.uk/courses/475-hnd-computing-software-development and https://www.glasgowclyde.ac.uk/courses/474-hnd-computer-science/

2.   EDUCATIONAL AIMS OF THE PROGRAMME

This programme aims to equip students with the knowledge, understanding and skills required by modern IT professionals. It provides practical coverage of the software skills required for the development of computer systems across a full range of commercial and industrial software-based applications. The programme has been designed to be flexible and allows students to personalise their studies while preparing them for a range of graduate roles. Students study a core set of modules in the early years which provide them with a solid technical underpinning and can then tailor their studies to their own interests though the choice of modules in years 3 and 4. Different career paths are supported by elective module combinations. Students can, for example, choose paths which would prepare them for graduate roles such as software developer, web developer, user experience designer or IT manager. The programme offers a 2 + 2 pathway.

The broad educational aims of the programme are to:
• Provide students with the necessary specialist computing knowledge and skills to equip them for a career in the development and support of computer-based information systems.

- Provide students with a specific understanding of the concepts, processes, methods and tools, and their application, to their selected specialist area
- Enable students to develop a cultural understanding of computing applications and the computing industry
- Develop the ability to apply sound design principles and practical skills
- Enable students to acquire good analytical, synthetic and communication skills
- Enable students to take responsibility for their own learning as they progress through the programme.
- Assist the student in developing the skills required in adapting to changing technological and organisational developments and learning new skills
- Provide articulation opportunities to access the programme for students with appropriate prior accredited learning experiences
- Provide education and training which is accredited by the British Computer Society

Expected Levels of Attainment
- On successful completion of level 1 of study a student will have a basic knowledge of the software and hardware concepts which underpin modern computing systems.
- On successful completion of level 2 of study a student will have a sound knowledge of software design and development and show competence in applying this to a range of software development domains.
- On successful completion of level 3 of study a student will be able to specify, develop, implement and support software developed in response to a perceived business need, in accordance with fundamental principles and methods, using appropriate techniques and tools.
- On successful completion of level H of study a student will, in addition, be able to critically evaluate alternative solution approaches and be able to use advanced techniques in the construction of a software solution.

3. **INTENDED LEARNING OUTCOMES** – *the programme provides opportunities for students to develop and demonstrate knowledge and understanding, skills, qualities and other attributes in the following areas.*

Preamble

The development of this programme has been informed by:

- The Quality Assurance Agency for Higher Education (QAA) Subject Benchmark Statement for Computing

- The Association of Computing Machinery (ACM) Curricula Recommendations[1] for Computer Science (2013), Information Systems (2010), Information Technology (2017), Cybersecurity (2017) and Software Engineering (2014)

- The British Computer Society (BCS) Core Requirements for Accreditation of Honours Programmes

- The Tech Partnership Degree Competency Outcomes for Software Development for Business

- The School of Computing, Engineering and Built Environment research in the areas of:

  - Networks and Communications,

  - Distributed and Pervasive Systems Initiative,

  - Interactive and Trustworthy Technologies,

  - Visual, Affective and Pervasive Systems and

  - Computer Science Education.

- The School of Computing, Engineering and Built Environment Knowledge Transfer and Lifelong Learning programmes

- Glasgow Caledonian University's Strategy for Learning (SfL)

- The School of Computing, Engineering and Built Environment Learning, Teaching and Assessment Strategy (LTAS).

3A **Knowledge and Understanding:**

A1 Explain the theoretical and practical aspects of software and hardware that underpin modern computer systems.
A2 Demonstrate knowledge and understanding of facts, concepts, principles and theories relating to software development.
A3 Utilize and appraise tools and techniques to assist in the development of software systems.
A4 Demonstrate an understanding of methods used to specify, model, develop, deploy and maintain software systems in an operational context.
A5 Demonstrate an awareness of the role of the IT professional and the context in which they operate including moral, legal, safety and ethical issues.
A6 Demonstrate an understanding and appreciation of the importance of negotiation, effective work habits, leadership, and good communication with stakeholders.
A7 Demonstrate an understanding of a range of technologies and the techniques required in the development of software systems.

3B **Intellectual Skills:**

B1 Identify, analyse and solve practical problems.
B2 Plan, conduct and report upon work.
B3 Evaluate alternative design and implementation solutions.
B4 Critically evaluate work undertaken by themselves and others.
B5 Gather and evaluate research information from a variety of sources.

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[1] https://www.acm.org/education/curricula-recommendations

3C   Professional/ Practical Skills:

C1   Undertake the analysis, design, implementation and testing of computer systems across a variety of application domains.
C2   Demonstrate effective use of a variety of appropriate techniques, tools and integrated development environments in the development and deployment of computer based information systems.
C3   Use appropriate methods and techniques to specify, develop and deploy software systems and services.
C4   Demonstrate competence in using processes and organisational working practices to manage IT projects within an operational context.
C5   Apply theory to practical and realistic career-related tasks.

3D   Transferable/Key Skills:

D1   Specialist knowledge and application
D2   Critical thinking and problem solving
D3   Critical analysis
D4   Communication skills, written, oral and listening
D5   Numeracy
D6   Effective information retrieval and research skills
D7   Computer literacy
D8   Self confidence, self discipline & self reliance (independent working)
D9   Awareness of strengths and weaknesses
D10   Creativity, innovation & independent thinking
D11   Knowledge of international affairs
D12   Appreciating and desiring the need for continuing professional development
D13   Reliability, integrity, honesty and ethical awareness
D14   Entrepreneurial independence and risk-taking
D15   Ability to prioritise tasks and time management
D16   Interpersonal skills, team working and leadership
D17   Presentation skills
D18   Commercial awareness

3E   Additional Industrial Placement Skills

The programme has an optional one year credit-rated placement period in related employment which provides the opportunity for further development of the taught practical, personal and professional skills in a work-based environment.

E1   Gain additional competence and training in the application of the practical skills of the programme.
E2   Develop an understanding of the practical considerations that constrain the application of theory in the workplace.
E3   Communicate and interact effectively within a work-based situation.
E4   Evaluate current research and technology concepts and their relationship and application to a work-based problem.

Strategy for Learning (SfL)

The Strategy for Learning (SfL) for this programme has been designed to meet the overall aims of the programme as well as the specific learning outcomes expected of students. The teaching approach is student centred, practical and participative and has been designed to move away from the traditional teacher centred paradigm to a more active, student driven, independent model of learning.
Students are encouraged to take a broad view of their education and to participate in competitions, engage in external visits, attend lectures by external speakers and participate in employer led events as well as attending scheduled classes, using online resources and undertaking independent study.

A range of delivery methods are used on the programme including: lectures; group-based tutorials and seminars (both tutor and student led); group based practical computing labs (supervised and directed); problem based

learning scenarios and case studies; directed study; coursework assignments (individual and group-based) and supervised projects (in all programme levels).

GCU's Strategy for Learning (SfL) is underpinned by a model comprised of eight design principles. This programme embeds these principles in the following ways
Engaged learning:
- The programme has a project module each year.
- The integrated projects in years 1-3 are group based encouraging team working, cross curricular activity. The integrated project module in year 3 requires students to work in interdisciplinary teams.
- A range of effective and accessible forms of academic support, including personal tutors and academic development tutors are available to students on the programme.
- Students have been involved in the programme development process and will continue to be involved in the development of the programme.
- Students are encouraged to broaden their range of skills, knowledge and strengths by participating in external competitions and events and to apply these experiences to their studies.

Divergent thinking
- Project modules in each year provide the opportunity for students to engage with open ended problems and projects both on their own and in teams .
- Students are encouraged to use collaboration tools to aid learning. The tools used include both Web 2.0 collaboration tools such as social media, blogging, wiki and GCULearn and industry standard versioning tools such as GitHub.

Flexible, Inclusive and Accessible
- Modules have been written with reference to GCU LEAD's Flexible, Accessible and Inclusive Curriculum and so use a blended-learning approach which is accessible to all students. They incorporate 'real-life' scenario where possible, make extensive use of problem-based and project-based work , use a variety of individual, group learning, face-to-face and/or virtual methods of delivery and incorporate materials in a variety of formats to cater for different learning styles.
- Learning technology is recognised as being central to implementing the GCU Strategy for Learning. By combining classroom-based approaches with technology-enhanced learning the programme aims to help students develop the independent and lifelong learning skills which are essential for success in the workplace and throughout life. Members of the programme team have high levels of technical competence and are additionally supported by the school's Learning Technologists which has enabled them to embed blended and online learning across the curriculum. GCULearn is used to provide materials in different formats to engage with different learning styles e.g. video tutorials, eBooks, podcasts
- Several modules make use of social media tools, blogs and wiki.
- The programme also provides flexible learning by allowing students to transfer between Department of Computing suite programmes in the early years.
- The programme provides a number of elective choices which allow students to tailor their studies to align with their background, interests and career aspirations.
- Exchange and Erasmus opportunities are available to students.

Broader/deeper learning
- Integrated project modules provide opportunities for multi- and inter- disciplinary group working
- The integrated project modules have been designed to develop team building and team working skills, as well as to encourage the use of reflective practices.
- The later years of the integrated project modules also incorporate peer assessment.
- Students in the later years of the programme have the opportunity to choose electives which allow them to tailor their studies to their individual strengths and interests.
- The importance of timely, high quality and constructive formative feedback in a variety of forms is recognised by the programme team. A number of team members are Caledonian Scholars and are working on projects in this area and modules have been written in the knowledge of the Feedback for Future Learning's 8 Feedback Principles. Module teams are expected to provide feedback within 3 weeks of both formative and summative submissions.

Global learning

- The programme has been designed with input from employers. They have provided case studies which include working in international teams, managing distributed projects etc.
- Students are encouraged to consider participation in International Association for the Exchange of Students for Technical Experience(IAESTE) activities

Real word problem solving
- The integrated project in year 2 specifies that students are expected to address problems set by external companies
- Other modules use live project briefs supplied by companies as and when this is deemed appropriate
- A number of modules also make use of employer written case studies

Entrepreneurship and employability
- Students are prepared for employment and placement through the programme's Employability and Career Planning programme which all students undertake during level 3
- Students attend talks by guest speakers, industrial visits and employer led activities such as CV writing workshops, interview technique classes and employability events

Responsible leadership and professionalism
- Reflection activities are embedded within many modules, notably the integrated project modules
- The understanding of standards of professional ethics, behaviours and work activities are embedded within modules at each level of study and specialized knowledge in the professional field is additionally addressed explicitly in the Research Skills and Professional Issues module in year 3
- The programmes will be professionally accredited (see section 1)

Assessment methods used include: unseen written examinations, coursework assignments (individual and group based), class tests (both unseen and open-book), practical laboratory tests (both unseen and open-book) and presentations (individual and group based). In project modules students produce an artifact, individual and group reports and also give presentations.
Most coursework assignments involve undertaking a significant element of independent study and implementing associated practical tasks within a given deadline. Students are thus required to develop independent responsibility, plan their learning, prioritise tasks and manage their time appropriately in order to successfully complete the assignment (D8,D9,D10, D15).
Many assignments require students to retrieve and utilise information from a variety of sources both research and commercially based (D6, D18).
Tutorial work requires students to present their work (and consider the work of others), in both written and oral form (D4,D17).
As well as the Integrated Projects at levels 1-3 being team based, significant use of group based coursework is also prevalent throughout the programme and is used to develop communication and team working skills (D4, D16)
An exemplar programme assessment loading matrix is given below.

The initial achievement and development of the range of transferable/key life skills (D1-D18) are also incorporated within the personal development planning process. This forms part of the learning strategy for the students to ensure that they undertake effective planning for their own personal, educational and career development. They will be supported throughout the programme by an advisor who will direct them through the process, and help them to develop effective techniques for reviewing progress. Students will identify outcomes at an early stage and review their progress as the programme develops. A key element in the process is to foster the employability of graduates. Students will be encouraged to make use of the University Career Centre and other mechanisms in order to develop an awareness of the industry and identify career opportunities. Students will also be encouraged to attend relevant research seminars and professional body branch meetings.
 Assessment of transferable/key skills is manifested mostly through the various coursework assessments with the development of these skills resulting in work of higher quality. Specifically however, effective team performance forms an explicit part of all group coursework assessment and the Integrated Project Modules. The projects also specifically assess communication skills via both their presentations and report.

Industrial Placement:

The additional professional career-based skills build upon the corresponding skills obtained in the Degree programme. Additional teaching and learning is achieved on placement through the supervision of the student in a programme of work-related tasks. An Industry based supervisor (from the work place) and a University based supervisor (a member of academic staff) provides the supervision. The student is prepared for placement through the programme's Employability and Career Planning programme which all students undertaken during level 3. The assessment of the skills is through a review of the placement performance based on a set of industry and university supervisor reports, a set of industrial experience reports by the student and a placement-based study project.

4.   PROGRAMME STRUCTURES AND REQUIREMENTS, LEVELS, MODULES, CREDITS AND AWARDS

4.1   FULL TIME DELIVERY

Year 1			Module Title	Credits
SHE1 Level				
Trimester A				
	1	A	Fundamentals of Computer Systems	10
	1	A	Fundamentals of Software Engineering	20
	1	A	Programming 1	20
	1	AB	Maths for Computing	20*
Trimester B				
	1	B	Fundamentals of Network and Cloud Computing	10
	1	B	Database Development	20
	1	B	Integrated Project 1	20
	1	AB	Maths for Computing	20*

Exit Award – Certificate of Higher Education in Computing   *120*

Year 2			Module Title	Credits
SHE2 Level				
Trimester A				
	2	A	Programming 2	20
	2	A	Object Oriented Analysis & Design	20
	2	A	Human Computer Interaction	20
Trimester B				
	2	B	Data Structures and Algorithm	20
	2	B	Web Application Development 1	20
	2	B	Integrated Project 2	20

Exit Award – Diploma of Higher Education in Computing   *240*

Year 3			Module Title	Credits
SHE3 Level				
Trimester A				
	3	A	DevOps	20
			Two electives from:	
	3	A	Elective: IT Project Management 1	20
	3	A	Elective: Applications Architecture and Design Patterns	20
	3	A	Elective: User Psychology	20
Trimester B				
	3	B	Research Skills & Professional Issues	20
	3	B	Integrated Project 3	20
			One elective from:	
	3	B	Elective: Mobile Platform Development	20
	3	B	Elective Web Application Development 2	20

Exit Award – BSc Computing				360
Year 4			**Module Title**	**Credits**

SHEH
Level
Trimester A

	H	AB		Honours Project	40*
			Two Electives from:		
	H	A	Elective:	Business Process Modelling	20
	H	A	Elective:	Machine Learning and Data Analysis	20
	H	A	Elective:	Front-end Web Development	20
	H	A	Elective:	Programming Paradigms	20
	H	A	Elective:	Advanced Human Computer Interaction	20

Trimester B

	H	AB		Honours Project	40*
			Two Electives from:		
	H	B	Elective:	Secure Software Development	20
	H	B	Elective:	IT Project Management 2	20
	H	B	Elective:	Managing Sustainable Business Excellence	20
	H	B	Elective:	Artificial Intelligence	20
	H	B	Elective:	Cloud Platform Development	20

Exit Award – BSc (Hons) Computing   480

Industrial Placement Year (Optional) Exit Award.
Students opting to undertake placement do so in the academic session after level 3
studies. Assessment is via the additional 60 SHE credit level 3 module, M3I323077
Industrial Placement. Successful completion of that module gives (Sandwich) in the
final exit award obtained by the student.
**Exception to Undergraduate Assessment Regulations, Sub-sections
19.4; 19.7.1; 19.8.2 Classification of Honours Award**: *that the Level 3
Industrial Placement module is excluded from the Honours Classification
Calculation Set.*

Student Exchange (Optional). After successful completion of Level 3
Trimester A students may be eligible to undertake an optional study
exchange during Trimester B at an appropriate host Institution out-with the
UK, provided the agreed programme of activity is equivalent to the
curriculum and intended student experience undertaken in Level 3 Trimester
B. Successful completion of the study exchange is credit bearing
to 40 credits and students must undertake this alongside the pre-requisite

module, Research Skills & Professional Issues (CSN) (20 credits) for a total of 60 credits

Part time

Year 1 SHE1 Level Trimester A			Module Title	Credits
	1	A	Fundamentals of Computer Systems	10
	1	A	Programming 1	20
	1	AB	Maths for Computing	20*
Trimester B				
	1	B	Fundamentals of Network and Cloud Computing	10
	1	B	Database Development	20
	1	AB	Maths for Computing	20*

Year 2 SHE1/2 Level Trimester A			Module Title	Credits
	1	A	Fundamentals of Software Engineering	20
	2	A	Human Computer Interaction	20
Trimester B				
	1	B	Integrated Project 1	20
	2	B	Web Application Development	20

Exit Award – Certificate of Higher Education in Computing (120 required)

Year 3 SHE2 Level Trimester A			Module Title	Credits
	2	A	Programming 2	20
	2	A	Object Oriented Analysis & Design	20
Trimester B				
	2	B	Data Structures and Algorithm	20
	2	B	Integrated Project 2	20

Exit Award – Diploma of Higher Education in Computing (240 required)				*240*

Year 4 SHE3 Level Trimester A			Module Title	Credits
			Two electives from:	
	3	A	Elective: Applications Architecture and Design Patterns	20
	3	A	Elective: IT Project Management 1	20
	3	A	Elective: User Psychology	20

Trimester B

			Module Title	Credits
3	B		Integrated Project 3	20
		One Elective from		
3	B	Elective:	Web Application Development 2	20
3	B	Elective:	Mobile Platform Development	20

Year 5
SHE3/H
Level
Trimester A

			Module Title	Credits
3	A		DevOps	20
		One Elective from:		
H	A	Elective:	Business Process Modelling	20
H	A	Elective:	Machine Learning and Data Analysis	20
H	A	Elective:	Front-end Web Development	20
H	A	Elective:	Programming Paradigms	20
H	A	Elective:	Advanced Human Computer Interaction	20

Trimester B

3	B		Research Skills & Professional Issues	20
		One Elective from:		
H	B	Elective:	IT Project Management 2	20
H	B	Elective:	Managing Sustainable Business Excellence	20
H	B	Elective:	Secure Software Development	20
H	B	Elective:	Cloud Platform Development	20
H	B	Elective:	Artificial Intelligence	20

Exit Award – BSc Computing (360 required)   ***360***

Year 6
SHEH
Level
Trimester A

			Module Title	Credits
H	AB		Honours Project	40*
		One Elective from: Not already taken		
H	A	Elective:	Business Process Modelling	20
H	A	Elective:	Machine Learning and Data Analysis	20
H	A	Elective:	Front-end Web Development	20
H	A	Elective:	Programming Paradigms	20
H	A	Elective:	Advanced Human Computer Interaction	20

Trimester B

H	AB		Honours Project	40*

One Elective from: Not already taken

H	B	Elective:	IT Project Management 2	20
H	B	Elective:	Management of Innovation and Creativity	20
H	B	Elective:	Secure Software Development	20
H	B	Elective:	Cloud Platform Development	20
H	B	Elective:	Artificial Intelligence	20

Exit Award – BSc (Hons) Computing   ***480***

Industrial Placement Year (Optional). Students opting to undertake placement do so in the academic session after successfully completing their Level 3 studies and before undertaking their Honours year. Assessment is via the additional 60 SCQF level 9 module, M3I323077 Industrial Placement (CCIS). Successful completion of that module gives (Sandwich) in the final exit award obtained by the student. **Exception to Undergraduate Assessment Regulations, Sub-sections 19.4; 19.7.1; 19.8.2 Classification of Honours Award**: *that the Level 3 Industrial Placement module is excluded from the Honours Classification Calculation Set.*

Student Exchange (Optional). After successful completion of Level 3 Trimester A students may be eligible to undertake an optional study exchange during Trimester B at an appropriate host Institution out-with the UK, provided the agreed programme of activity is equivalent to the curriculum and intended student experience undertaken in Level 3 Trimester B. Successful completion of the study exchange is credit bearing to 40 credits and students must undertake this alongside the pre-requisite module, Research Skills & Professional Issues (CSN) (20 credits) for a total of 60 credits.

5. SUPPORT FOR STUDENTS AND THEIR LEARNING

- Induction Programme
- Programme and Module Handbooks
- Year Tutors
- Project Co-ordinators
- Personal tutors in accordance with the GCU Personal, Professional, Academically Informed, Consolidated, Transitional (PPACT) standard
- Employability and Career Planning programme
- Personal Development Planning
- Study Guides for projects and coursework
- Saltire Learning Centre with access to other local and national library resources
- Student e-mail and programme/module based Virtual Learning Environment facilities (GCULearn)
- Departmentally based PC Computer Laboratories equipped with the full range of software used on the programme.
- Open access to Departmental and University Computer facilities including access to the 24 hour computing laboratory
- Specialist Computer Laboratories e.g. E-Motion Laboratory, ITT Laboratory
- Supply of specific proprietary course software for home use to provide additional study and work access
- Open access to teaching staff including the Programme Leader
- Access to the Base which provides support, assistance and guidance to students
- SEBE Learning Development Centre which provides specific study skills support and guidance
- Web based learning facilities
- Access to University Careers Centre
- Professional and Industry Body Contacts
- Student representatives on the Programme Board
- Student representatives on Senate and its Standing Committees
- Student Staff Consultative Group

For Students who undertake the Optional Placement:
- Preparation programme to assist students in obtaining placement.
- Specified staff roles (Placements Tutor and Placements Administrator) to assist with identifying specific placement opportunities and helping students in applying for placements.

When in placement liaison is conducted between University and Industry based supervisors. Planned reviews and visits of student when in placement.

For students who undertake the programme part-time:

- Materials are made available in flexible formats.

6. CRITERIA FOR ADMISSION

Candidates must be able to satisfy the general admissions requirements of Glasgow Caledonian University

Programme Admission Requirements:

Standard First Year Entry Requirements

The minimum entrance requirements for entry into the first year of the programme are one of the following:
- SQA passes in 5 subjects of which at least 3 are at Higher Grade
- GCE passes in 5 subjects of which 2 are Advanced level (or equivalent)
- An appropriate program of SQA National Certificate Course units which must include passes in modules which are at least equivalent to SQA/GCE English and Mathematics at Ordinary/ Standard grade at Credit level
- HNC in Computing/IT Applications or Equivalent
- BTEC National Diploma in Computing/IT
- IT Access course or equivalent
- Advanced GNVQ in IT
- Irish Leaving Certificate – 5 subjects passed at H level (at least C grade) or equivalent
- International qualifications which are equivalent to standard entry (in these cases appropriate EOSL qualification is required)

In all of the above cases, the qualifications must include SCE/GCE pass in English at Standard grade at Credit level (or equivalent) and Mathematics at Standard grade at Credit level (or equivalent)
Annually the Programme Board also considers the competitive entry requirements based on student demand and allocated places.

Recognition of Prior Learning:

Accumulation of credit points from other Courses and from prior experiential learning may allow direct entry into the programme at the appropriate level, subject to satisfying the necessary pre-requisites for completion of the programme.

Articulation to Level 3

The following HND group awards are likely to be sufficiently specialised to enable articulation directly to level 3 of this programme:
- HND Computer Science
- HND Computing - Software Development
- HND Information Systems (with suitable optional units)
- HND Interactive Media (with suitable optional units)
- HND Multimedia Computing (with suitable optional units)
- HND Multimedia Computing: Web Development (with suitable optional units)

Students with other Computing/IT HND group awards, without sufficient specialisation to enable level 3 articulation, would normally be able to articulate to level 2

Articulation to Level 2

The following HNC group award qualifications are likely to be sufficiently specialised to enable articulation directly to level 2, if the applicant also has a total of 15 HN credits:
- HNC Computing
- HNC Information Technology
- HNC Multimedia Computing: Web Development

Given the modular nature of SQA HND awards, these lists for Level 2 and level 3 articulation can only be viewed as indicative and not exhaustive. Thus consideration will be given to named HND awards on the basis of the module profile therein.

BSc (Hons) Computing (GCU Pathways) (G501) Programme Admission Requirements:
The minimum entry requirements are:

SQA Higher: BB with one Higher and a Nat 5 required from Computing, Maths, IT or Science

Pathway students enrol on the undergraduate BSc (Hons) Computing at Glasgow Caledonian University. In the first two years, they study HND Computing Software Development or HND Computer Science at Glasgow Clyde College while preparing for Level 3 and 4 (for Honours) of the degree at GCU.

Progression Requirements:
Students who successfully pass their HND Computing Software Development or HND Computer Science programme with Graded Units of AA, can progress to Level 3 of the BSc (Hons) Computing.

Please note that in order to be considered for the BSc (Hons) Computing (GCU Pathways) programme you must be eligible for 'home fees' i.e. a Scottish Domiciled or Non-UK EU National.

Mature and overseas students: specific requirements
Formal entry requirements may be relaxed for mature applicants (21 years of age and older) whose record of educational achievement and relevant experience is deemed to be appropriate. Non-standard applicants will normally be interviewed to assess their suitability for the programme.

Additionally, overseas students require to demonstrate an appropriate level of competence in written and spoken English, if their entry qualification was not delivered and assessed in English.

Equal Opportunities
The University will seek at all times equality of opportunity for all applicants and seeks not to discriminate on any grounds irrelevant to the above general principle of admission.

Applicants with a disability
All applicants for admission to the programme who reveal a disability will be invited to a meeting with the Admissions Tutor and/or University Disability Adviser in order that the specific needs of the applicant can be assessed. This is not part of the selection process but students may be advised at this stage if the nature of their disability means that they might be unable to fulfil the academic or professional requirements of the programme. Equally it may not be possible for the University to make reasonable adaptations to enable an applicant to undertake a particular programme. Should this be the case, the University will respond positively and advice on alternative programmes and options will be offered.

7. METHODS FOR EVALUATING AND IMPROVING THE QUALITY AND STANDARDS OF TEACHING AND LEARNING

Mechanisms for review and evaluation of teaching, learning, assessment, the curriculum and outcome standards:

- Annual Module Monitoring Process
- Annual Programme Monitoring Process/ Continuous Quality Improvement Plan
- Module Feedback Questionnaire
- External Assessor reports
- Annual monitoring (required by Professional and/or Statutory Bodies)
- Enhancement-led Internal Subject Review (ELISR)
- Enhancement-led Institutional Review (ELIR)

- Annual report to external accrediting bodies
- Reports from Professional/Statuary Body
- Academic strategy review and development by School Learning and Teaching Committee(SLTC)
- School based quality procedures for moderation of assessments (Exam and Coursework)

Committees with responsibility for monitoring and evaluating quality and standards:
- Student-Staff Consultative Group (SSCG)
- Programme Board (PB)
- School Board
- Assessment Board (AB)
- University Learning and Teaching Sub-Committee (LTSC)
- University Academic Policy and Practice Committee (APPC)
- University Senate
- School Learning and Teaching Committee (SLTC)
- Undergraduate Assessment Board

Mechanisms for gaining student feedback on the quality of teaching and their learning experience:
- Student-Staff Consultative Group (SSCG)
- Student representation on Programme Board (PB)
- Student representation on School Board
- Module Feedback Questionnaire
- GCULearn
- Open access to members of Programme Team e.g. Module Leaders, Programme Leader, Personal Tutor, Year Tutor
- Placement Reports
- NSS

Staff development priorities include:
- Postgraduate Certificate in Learning and Teaching
- Continuous Professional Development (CPD)
- Performance and Development Annual Review (PDAR)
- Peer support for teaching
- Mentoring scheme for new teaching staff
- Conference and seminar attendance and presentation
- Research Excellence Framework (REF) submission
- Membership of Higher Education Academy (HEA)
- Membership of and involvement with Professional Bodies
- Regular Programme Team and Subject Group meetings
- Institutional learning and teaching workshops

8.   ASSESSMENT REGULATIONS

Students should expect to complete their programme of study under the Regulations that were in place at the commencement of their studies on that programme, unless proposed changes to University Regulations are advantageous to students.

The Glasgow Caledonian University Assessment Regulations which apply to this programme, dependent on year of entry, can be found on the university web site at:
 GCU Assessment Regulations

Assessment rules and Honours classification:-

- Minimum pass mark is (40%) for each module
- Overview of assessment details are provided in the Student Handbook for the programme and a copy of full assessment regulations are available from the University web site
- To qualify for an award, students must complete all the programme requirements and obtain 360 SHE credit points for the Unclassified degree (BSc) and 480 SHE credit points for the Honours degree (BSc Hons)

Summary of classifications, marks and their interpretation for honours degree classification

Classification	Marks	Interpretation
1st	70% - 100%	Excellent: Marks represent a first class performance
2nd/Upper	60% - 69%	Very Good: Marks represent an upper second class performance
2nd/Lower	50% - 59%	Good: Marks represent a lower second class performance
3rd	40% - 49%	Satisfactory: Marks represent a third class performance

The calculation for the award and final classification of the Honours Degree is on the basis of the best 180 SHEH and SHE3 credits, of which a minimum of 90 must be at SHEH. The Dissertation/Project at level H must be included in this set.

If a student enters directly into Level H, then the marks from the taught 4th year only contribute to the award and final classification of the Honours Degree.

Regulations for distinction at Unclassified degree level:

Students who pass all 6 modules at level 3 at the first attempt and who achieve an average of 70% or more (with no mark in any module below 55%) shall normally be eligible for the award of an Unclassified degree with distinction.

Role of External Assessor:

External Assessors are appointed to Undergraduate Assessment Boards. The duties of an External Assessor will include the following:

- To moderate the work of the Internal Assessors in respect of the assessments under his/her jurisdiction
- To attend Assessment Boards at which the results of a final stage assessment will be determined
- To satisfy himself/herself that the work and decisions of the Assessment Board(s) are consistent with the policies and regulations of the University and best practice in higher education
- To ensure that students are assessed within the regulations approved by the University for the programme and to inform the University on any matter which, in his/her view, militates against the maintenance of proper academic standards
- To report annually to the School's Learning and Teaching Committee on the standards attained by students on the programme and on any other matters which may seem appropriate for report

9. INDICATORS OF QUALITY AND STANDARDS

Internal Indicators
- Details of approval, development events and Enhancement Led Internal Subject Reviews organised by the School/University
- Annual Programme Monitoring and development of programme's Continuous Quality Improvement Plan
- School Module Management Committee annual report on module performance
- Prizes awarded by the School for outstanding performance

External Indicators
- Professional/Statutory Body accreditation visits and reports
- Quality Assurance Agency subject reviews
- External Assessor Reports

10. INFORMATION ABOUT THE PROGRAMME

Key information about the programme can be found in:

- Definitive Programme Document
- Programme Handbook
- Module Handbook
- University Website http://www.gcu.ac.uk
- School Website
- GCULearn
- My Caledonian
- University Prospectus

This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning assessment methods of each module can be found in the University Module catalogue which can be accessed from the University website. The accuracy of the information in this document is reviewed by the University and may be checked by the Quality Assurance Agency for Higher Education.

A curriculum map is attached showing how the outcomes are being developed and assessed within the programme. This relates the modules from Section 4 to the outcomes in Section 3.

DATE**: Feb 2022**

CURRICULUM MAP for BSc/BSc (Hons) Computing
PSMAP

The curriculum map links the modules (Section 4) to the Outcomes listed in Section 3
This map provides both a design aid to help academic staff identify where the programme outcomes are being developed and assessed within the course. It also provides a check list for quality assurance purposes and could be used in approval, accreditation and external examining processes. This also helps students monitor their own learning, and their personal and professional development as the course progresses. The map shows only the main measurable learning outcomes which are assessed. There are additional learning outcomes (e.g. attitudes and behaviour) detailed in the module specifications which are developed but do not lend themselves to direct measurement

Modules   Programme outcomes

SHE Level		Module Title	A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	C1	C2	C3*	C4	C5*
LEVEL 1		Fundamentals of Computer Systems	x								x								
		Programming 1		x	x					x					x	x			
		Fundamentals of Software Engineering		x	x	x					x	x			x		x		x
		Fundamentals of Network and Cloud Computing	x						x		x								
		Database Development	x	x	x	x					x	x	x		x	x	x		
		Integrated Project 1			x	x	x	x		x	x				x	x	x	x	x
		Maths for Computing		x							x								
LEVEL 2		Object-oriented Analysis and Design		x		x				x	x	x			x		x		
		Programming 2		x	x					x	x				x	x			
		Human Computer Interaction	x	x	x	x				x	x	x	x			x	x		
		Data Structures and Algorithms		x						x	x	x							
		Web Application Development 1	x	x	x					x		x			x	x			
		Integrated Project 2			x	x	x	x		x	x		x		x	x	x	x	x
LEVEL 3		IT Project Management 1				x	x	x		x	x						x	x	x
		Research Skills and Professional Issues		x			x			x			x	x					x
		Integrated Project 3			x	x	x	x		x	x		x	x	x	x	x	x	x

		A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	C1	C2	C3*	C4	C5*
C5*	**Level 3 electives**																	
	Application Architecture and Design Patterns		x	x				x	x	x	x			x		x		
	User Psychology		x					x		x					x			
	DevOps			x	x	x		x	x	x	x				x	x	x	x
	Web Application Development 2	x	x	x			x	x	x	x				x	x			
	Mobile Platform Development	x	x	x				x		x				x	x	x		
	Honours Project			x	x	x		x		x	x	x	x	x				x
	Level H electives																	
	Machine Learning and Data Analysis		x	x				x		x	x				x			
	Business Process Modelling			x	x				x	x	x	x			x		x	
LEVEL H	Front-end Web Development	x	x	x			x	x	x	x				x	x			
	IT Project Management 2				x	x	x				x					x	x	x
	Managing Sustainable Business Excellence	x	x	x	x		x		x			x		x		x	x	
	Secure Software Development	x	x	x		x		x	x	x	x			x	x	x		
	Cloud Platform Development	x	x					x	x	x	x				x	x		
	Advanced Human Computer Interaction		x					x		x	x					x	x	x
	Programming Paradigms		x					x		x	x					x	x	x
	Artificial Intelligence		x	x				x		x	x				x			

Transferable Skills
Modules

Programme outcomes

SHE Level		Module Title	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17	D18
LEVEL1		Fundamentals of Computer Systems	x	x	x	x	x					x		x			x	x		
		Programming 1	x	x		x	x		x	x	x	x					x			
		Fundamentals of Software Engineering	x	x		x	x		x	x		x		x	x		x			x
		Fundamentals of Network and Cloud Computing	x	x	x	x	x		x	x	x						x			x
		Database Development	x	x	x	x	x		x	x							x			
		Integrated Project 1		x		x		x	x	x	x		x	x	x	x	x	x	x	x
		Maths for Computing	x	x			x			x				x			x			
LEVEL 2		Object Oriented Analysis & Design	x	x		x			x	x	x						x	x		
		Programming 2	x	x	x	x	x		x	x	x	x					x			
		Human Computer Interaction	x	x					x			x					x	x	x	
		Data Structures and Algorithms	x	x		x	x		x	x		x					x			
		Web Application Development 1	x	x		x			x	x	x						x			
		Integrated Project 2		x		x		x	x	x	x			x	x		x	x	x	x

	Level 3		D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17	D18
LEVEL 3		IT Project Management 1	x	x	x	x	x		x	x	x		x	x			x	x		x
		Research Skills and Professional Issues	x		x	x		x		x					x		x		x	x
		Integrated Project 3		x		x		x	x	x	x		x	x	x	x	x	x	x	x
	Level 3 electives																			
		Applications Architecture and Design Patterns	x	x	x	x	x		x	x	x	x								
		User Psychology	x	x					x			x					x			
		DevOps	x	x	x	x			x	x	x	x						x		
		Web Application Development 2	x	x	x	x			x			x					x			
		Mobile Platform Development	x	x	x	x		x	x	x	x		x	x			x			
LEVEL H	**Level H**																			
		Honours Project	x	x	x	x		x	x	x	x	x		x	x		x		x	
	Level H electives																			
		Machine Learning and Data Analysis	x	x	x	x	x		x	x		x					x			x
		Front-end Web Development	x	x		x			x	x		x					x			
		Business Process Modelling	x	x	x	x	x		x	x		x					x			
		IT Project Management 2	x	x	x	x	x	x	x	x	x	x		x	x		x	x	x	x
		Managing Sustainable Business Excellence	x	x	x	x		x		x			x		x		x	x		
		Secure Software Development	x	x	x	x	x		x	x		x		x	x		x			
		Programming Paradigms	x	x					x								x			
		Advanced Human Computer Interaction	x	x					x								x			
		Cloud Platform Development	x	x	x				x	x										x
		Artificial Intelligence	x	x	x	x	x		x	x		x					x			x

SHE Level	Module Code	Module Title	E1	E2	E3	E4
LEVEL 3	M3I323077	Industrial Placement	x	x	x	X

BSc/BSc (Hons) Computing
ASSESSMENT LOADING MATRIX

Year 1									
Module Code	**Module Title**	**Trimester**	**Credits**	**Assessment Weighting**					
				Cw1	**Cw2**	**Cw3**	**Exam1 (Exams Office)**	**Ex2 (Exams Office)**	**Ex3 (Class Test)**
M1I325623	Fundamentals of Computer Systems	A	10	50%	50%				
M1I322908	Fundamentals of Software Engineering	A	20	50%	50%				
M1I325617	Programming 1	A	20	30%	70%				
M1I325851	Mathematics for Computing	AB	20	40%			60% (alt)		
M1I325624	Fundamentals of Network and Cloud Computing	B	10	50%	50%				
M1I325625	Database Development	B	20	100%					
M1I325668	Integrated Project 1	B	20	100%					
EXIT AWARD: Certificate of Higher Education									

Year 2									
Module Code	**Module Title**	**Trimester**	**Credits**	**Assessment Weighting**					
				Cw1	**Cw2**	**Cw3**	**Exam1 (Exams Office)**	**Ex2 (Exams Office)**	**Ex3 (Class Test)**
M2I325618	Programming 2	A	20	100%					
M2I322952	Object Oriented Analysis & Design	A	20	50%			50% (alt)		
M2I625666	Human Computer Interaction	A	20	60%	40%				
M2I225696	Data Structures & Algorithms	B	20	50%			50% (alt)		
M2I325626	Web Application Development 1	B	20	100%					
M2I325669	Integrated Project 2	B	20	100%					
EXIT AWARD: Diploma of Higher Education									

Year 3									
Module Code	**Module Title**	**Trimester**	**Credits**	**Assessment Weighting**					
				Cw1	**Cw2**	**Cw3**	**Exam1 (Exams Office)**	**Ex2 (Exams Office)**	**Ex3 (Class Test)**
M3I322913	IT Project Management 1 **(option)**	A	20	50%			50% (alt)		
M3I325687	DevOps	A	20	50%	50%				
M3I325639	Application Architecture & Design Patterns **(option)**	A	20	50%			50% (alt)		
M3I625715	User Psychology **(option)**	A	20	100%					

Module Code	Module Title	Trimester	Credits	Cw1	Cw2	Cw3	Exam1 (Exams Office)	Ex2 (Exams Office)	Ex3 (Class Test)
M3I323074	Research Skills & Professional Issues	B	20	30%	70%				
M3W225670	Integrated Project 3	B	20	100%					
M3I325640	Web Application Development 2 **(option)**	B	20	50%	50%				
M3I326836	Mobile Platform Development 2 **(option)**	B	20	100%					
EXIT AWARD: Bachelor Degree									

Year 4									
Module Code	**Module Title**	**Trimester**	**Credits**	**Assessment Weighting**					
				Cw1	**Cw2**	**Cw3**	**Exam1 (Exams Office)**	**Ex2 (Exams Office)**	**Ex3 (Class Test)**
MHI225680	Machine Learning and Data Analysis **(option)**	A	20	100%					
MHI325698	Business Process Modelling **(option)**	A	20	50%			50% (alt)		
MHI326715	Front-end Web Development (**option**)	A	20	50%	50%				
MHI325688	Programming Paradigms **(option)**	A	20	50%			50% (alt)		
MHI625672	Advanced HCI (**option**)	A	20	100%					
MHW225671	Honours Project	AB	40	100%					
MHI325642	Secure Software Development **(option)**	B	20	50%			50% (alt)		
MHI322925	IT Project Management 2 **(option)**	B	20	40%	60%				
MHI325614	Cloud Platform Development **(option)**	B	20	50%			50% (alt)		
MHN125559	Managing Sustainable Business Excellence **(option)**	B	20	30%	70%				
MHI625658	Artificial Intelligence **(option)**	B	20	100%					
EXIT AWARD: Bachelor Degree with Honours									