PROGRAMME SPECIFICATION

for the

BSc/BSc (Hons) Computing Programme

November 2018

GLASGOW CALEDONIAN UNIVERSITY   PS1

Programme Specification Pro-forma

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

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 year1 of study a student will have a basic knowledge of the software and hardware concepts which underpin modern computing systems.
• On successful completion of year 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 year 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 year 4 (honours) 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[5] 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:

Students should be able to :	
A1	Explain the theoretical and practical aspects of software and hardware which underpin modern computer systems
A2	Demonstrate knowledge and understanding of facts, concepts, principles and theories relating to the development of software solutions for a range of contemporary computer systems
A3	Utilize and appraise tools and techniques to assist in the development of software solutions for a range of contemporary computer systems
A4	Demonstrate an understanding of the 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 an understanding of a range of technologies and the techniques required in the development of software systems.

3B Practice: Applied knowledge, skills and understanding

B1	Identify, analyse and solve practical problems across a variety of application domains
B2	Evaluate alternative solutions to problems in an appropriate subject domain.
B3	Demonstrate effective use of a variety of appropriate techniques, tools and integrated

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	development environments in the development and deployment of computer based information systems
B4	Use appropriate methods and techniques to specify, develop and deploy IT systems and services
B5	Demonstrate competence in using processes to manage IT projects within an operational context
B6	Apply theory to practical and realistic career-related tasks

3C Generic cognitive skills

C1	Plan, conduct and report upon work
C2	Critical thinking and problem solving
C3	Critical analysis
C4	Self confidence, self discipline & self reliance (independent working)
C5	Creativity, innovation & independent thinking
C6	Gather and evaluate research information from a variety of sources

3D Communication, numeracy and ICT skills

D1	Communication skills, written, oral and listening
D2	Numeracy
D3	Effective information retrieval and research skills
D4	Computer literacy
D5	Presentation skills

3E Autonomy, accountability and working with others

E1	Awareness of strengths and weaknesses/ Planning, monitoring, reviewing and evaluating own learning and development
E2	Reliability, integrity, honesty and ethical awareness
E3	Ability to prioritise tasks and time management
E4	Appreciating and desiring the need for continuing professional development
E5	Interpersonal skills, team working and leadership
E6	Entrepreneurial independence and risk-taking
E7	Knowledge of international affairs
E8	Commercial Awareness

3F 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

F1	Gain additional competence and training in the application of the practical skills of the programme.
F2	Develop an understanding of the practical considerations that constrain the application of theory in the workplace.
F3	Communicate and interact effectively within a work-based situation
F4	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 artefact, 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.
Many assignments require students to retrieve and utilise information from a variety of sources both research and commercially based.
Tutorial work requires students to present their work (and consider the work of others), in both written and oral form.
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.
An exemplar programme assessment loading matrix is given below.

The initial achievement and development of the range of transferable/key life skills 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.

Table 2: Matrix showing the timing of assessments across the academic year

	Trimester 1 1	2	3	4	5	6	7	8	9	10	11	12	Exam period	Exam	Trimester 2 1	2	3	4	5	6	7	8	9	10	11	12	Exam period	Exam
Year 1																												
SCQF Level 7																												
Fundamentals of Computer Systems							50%cw					50%cw																
Maths for Computing								x								x						x				40% cw		60%
Programming 1		x	x	x	X	x	x	x	x	x		37+70%																
Fundamentals of Software Engineering												50%cw	50%cw															
Fundamentals of Network and Cloud Computing																							50%cw			50%cw		
Database Development																										100%cw		
Integrated Project 1																										100% cw		
Year 2																												
SCQF Level 8																												
Object-oriented Analysis and Design												50% cw		50%exam														
Programming 2												100%cw																
Human Computer Interaction										60%		40%																
Data Structures and Algorithms																										50% cw		50%
Web Application Development 1																										100%		
Integrated Project 2																										100% cw		
Year 3																												
SCQF Level 9																												
IT Project Management 1												50% cw		50% exam														
Web Application Development 2											70%cw		30%cw															
Research Skills and Professional Issues																			30%cw							70%cw		
Integrated Project 3																										100% cw		
Elective choices																												
Application Architecture and Design Patterns												50% cw		50% exam														
User Psychology												100% cw																
DevOps																				50%cw						50% cw		
Mobile Platform Development																										50%		50%
Year H																												
SCQF Level 10																												
Honours Project									20%																	70% cw	10%	
Front-end Web Development																										50%cw		50% exam
Elective choices																												
Machine Learning and Data Analytics											50%cw	50%cw																
Business Process Modelling												50% cw		50% exam														
Advanced HCI												100%cw																
Programming Paradigms												50%cw		50% exam														
IT Project Management 2																										40% cw		60% exam
Management of Innovation and Creativity																							40%cw			60%cw		
Artificial Intelligence																										100%		
Secure Software Development																										50%cw		50%exam
Cloud Platform Development																										50% cw		50% exam

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

4.1 FULL TIME DELIVERY

Year 1			Module Title	Credits
SCQF 7 Level				
Trimester A				
M1I325623	1	A	Fundamentals of Computer Systems	10
M1I322908	1	A	Fundamentals of Software Engineering	20
M1I325617	1	A	Programming 1	20
M1I325616	1	AB	Maths for Computing	20*
Trimester B				
M1I325624	1	B	Fundamentals of Network and Cloud Computing	10
M1I325625	1	B	Database Development	20
M1I325668	1	B	Integrated Project 1	20
M1I325616	1	AB	Maths for Computing	20*

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

Year 2			Module Title	Credits
SCQF 8 Level				
Trimester A				
M2I325618	2	A	Programming 2	20
M2I322952	2	A	Object Oriented Analysis & Design	20
M2I625666	2	A	Human Computer Interaction	20
Trimester B				
M2I225696	2	B	Data Structures and Algorithm	20
M2I325626	2	B	Web Application Development 1	20
M2I325669	2	B	Integrated Project 2	20

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

Year 3				Module Title	Credits
SCQF 9 Level					
Trimester A					
M3I322913	3	A		IT Project Management 1	20
M3I325640	3	A		Web Application Development 2	20
			One Elective from:		
M3I325639	3	A	Elective:	Applications Architecture and Design Patterns	20
M3I622934	3	A	Elective:	User Psychology	20
Trimester B					
M3I323074	3	B		Research Skills & Professional Issues	20
M3W225670	3	B		Integrated Project 3	20
			One Elective from:		
M3I325687	3	B	Elective:	DevOps	20
M3I325644	3	B	Elective:	Mobile Platform Development	20

Exit Award – BSc Computing   360

Year 4			Module Title	Credits

SCQF 10
Level
Trimester A

Code				Module Title	Credits
MHW225671	H	AB		Honours Project	40*
			Two Electives from:		
MHI325698	H	A	Elective:	Business Process Modelling	20
MHI225680	H	A	Elective:	Machine Learning and Data Analytics	20
MHI625672	H	A	Elective:	Advanced HCI	20
MHI325688	H	A	Elective:	Programming Paradigms	20

Trimester B

Code				Module Title	Credits
MHW225671	H	AB		Honours Project	40*
MHI325689	H	B		Front-end Web Development	20
			One Elective from:		
MHI325642	H	B	Elective:	Secure Software Development	20
MHI322925	H	B	Elective:	IT Project Management 2	20
MHN222487	H	B	Elective:	Management of Innovation and Creativity	20
MHI625658	H	B	Elective:	Artificial Intelligence	20
MHI325614	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 SCQF credit level 9 module, M3I323077 Industrial Placement. Successful completion of that module gives (Sandwich) in the final exit award obtained by the student.

Part time

Year 1			**Module Title**	**Credits**
SCQF 7 Level				
Trimester A				
M1I325623	1	A	Fundamentals of Computer Systems	10
M1I325617	1	A	Programming 1	20
M1I325616	1	AB	Maths for Computing	20*
Trimester B				
M1I325624	1	B	Fundamentals of Network and Cloud Computing	10
M1I325625	1	B	Database Development	20
M1I325616	1	AB	Maths for Computing	20*
Year 2			**Module Title**	**Credits**
SCQF 7/8 Level				
Trimester A				
M1I322908	1	A	Fundamentals of Software Engineering	20
M2I625666	2	A	Human Computer Interaction	20
Trimester B				

			Module Title	Credits
M1I325668	1	B	Integrated Project 1	20
M2I325626	2	B	Web Application Development 1	20

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

Year 3			**Module Title**	**Credits**
SCQF 8 Level				
Trimester A				
M2I325618	2	A	Programming 2	20
M2I322952	2	A	Object Oriented Analysis & Design	20
Trimester B				
M2I225696	2	B	Data Structures and Algorithm	20
M2I325669	2	B	Integrated Project 2	20

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

Year 4			**Module Title**	**Credits**
SCQF 9 Level				
Trimester A				
M3I325640	3	A	Web Application Development 2	20
			One Elective from:	
M3I325639	3	A	Elective: Applications Architecture and Design Patterns	20
M3I622934	3	A	Elective: User Psychology	20
Trimester B				
M3W225670	3	B	Integrated Project 3	20
			One Elective from:	
M3I325687	3	B	Elective: DevOps	20
M3I325644	3	B	Elective: Mobile Platform Development	20
Year 5			**Module Title**	**Credits**
SCQF 9/10 Level				
Trimester A				
M3I322913	3	A	IT Project Management 1	20
			One Elective from:	
MHI325698	H	A	Elective: Business Process Modelling	20
MHI225680	H	A	Elective: Machine Learning and Data Analytics	20
MHI625672	H	A	Elective: Advanced HCI	20
MHI325688	H	A	Elective: Programming Paradigms	20
Trimester B				
M3I323074	3	B	Research Skills & Professional Issues	20
MHI325689	H	B	Front-end Web Development	20

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

Year 6			**Module Title**	**Credits**
SCQF 10 Level				
Trimester A				
MHW225671	H	AB	Honours Project	40*

			One Elective from:		
MHI325698	H	A	Elective:	Business Process Modelling	20
MHI225680	H	A	Elective:	Machine Learning and Data Analytics	20
MHI625672	H	A	Elective:	Advanced HCI	20
MHI325688	H	A	Elective:	Programming Paradigms	20
Trimester B					
MHW225671	H	AB		Honours Project	40*
			One Elective from:		
MHI325642	H	B	Elective:	Secure Software Development	20
MHI322925	H	B	Elective:	IT Project Management 2	20
MHN222487	H	B	Elective:	Management of Innovation and Creativity	20
MHI625658	H	B	Elective:	Artificial Intelligence	20
MHI325614	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 SCQF credit level 9 module, M3I323077 Industrial Placement. Successful completion of that module gives (Sandwich) in the final exit award obtained by the student.

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.

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.

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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 SCQF credit points for the Unclassified degree (BSc) and 480 SCQF 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 SCQF 10 and SCQF 9 credits, of which a minimum of 90 must be at SCQF 10. The Dissertation/Project at level 10 must be included in this set.

If a student enters directly into fourth year, 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 in year 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**: June 2018**

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

SCQF Level		Module Title	A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	B6	C1	C2	C3	C4	C5	C6
LEVEL 7	M1I325623	Fundamentals of Computer Systems	x													x	x	x		x	
	M1I325617	Programming 1		x	x					x		x					x		x	x	
	M1I322908	Fundamentals of Software Engineering		x	x	x				x	x		x		x	x	x		x	x	
	M1I325624	Fundamentals of Network and Cloud Computing	x						x							x	x	x	x		
	M1I325625	Database Development	x	x	x	x				x	x	x	x			x	x	x	x		
	M1I325668	Integrated Project 1		x	x	x	x			x		x	x	x	x	x	x		x		
	M1I325616	Maths for Computing		x						x							x		x		
LEVEL8	M2I322952	Object-oriented Analysis and Design		x		x				x	x		x			x	x		x		
	M2I325618	Programming 2		x	x					x		x				x	x	x	x	x	
	M2I625666	Human Computer Interaction	x	x	x	x				x	x	x	x			x	x	x		x	
	M2I225696	Data Structures and Algorithms		x						x	x					x	x		x	x	
	M2I325626	Web Application Development 1	x	x	x					x	x	x					x		x		
	M2I325669	Integrated Project 2			x	x	x	x		x		x	x	x	x	x	x	x	x		
LEVEL 9	M3I322913	IT Project Management 1				x	x	x			x		x	x	x	x	x	x	x		
	M3I325640	Web Application Development 2	x	x	x				x	x		x	x			x	x	x	x	x	
	M3I323074	Research Skills and Professional Issues		x			x								x	x		x	x		x
	M3W225670	Integrated Project 3			x	x	x	x		x		x	x	x	x	x	x	x	x		x

Level	Code	Level 3 electives	A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	B6	C1	C2	C3	C4	C5	C6
	M3I325639	Application Architecture and Design Patterns		x	x				x	x	x		x			x	x	x	x	x	
	M3I622934	User Psychology		x					x			x				x	x			x	
	M3I325687	DevOps			x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	
	M3I325644	Mobile Platform Development	x	x	x					x	x	x	x				x	x	x		
LEVEL 10	MHW225671	Honours Project			x	x	x		x	x	x				x	x	x	x	x	x	x
	MHI325689	Front-end Web Development	x	x	x			x	x	x		x				x	x	x	x	x	
	Level H electives																x		x	x	
	MHI225680	Machine Learning and Data Analytics		x	x				x		x	x				x	x	x	x	x	
	MHI325698	Business Process Modelling			x	x				x	x	x		x		x	x	x	x	x	
	MHI625672	Advanced HCI	x	x	x	x				x	x	x				x		x	x	x	
	MHI325688	Programming Paradigms		x	x				x	x	x	x	x				x	x	x	x	
	MHI322925	IT Project Management 2				x	x	x			x		x	x	x		x	x	x	x	
	MHN222487	Managing Innovation and Creativity						x			x			x	x		x			x	
	MHI625658	Artificial Intelligence		x	x				x	x					x	x	x	x	x	x	
	MHI325642	Secure Software Development	x	x	x		x		x	x	x	x	x			x	x	x	x	x	
	MHI325614	Cloud Platform Development	x	x					x	x	x	x	x				x	x	x		

SCQF Level		Module Title	D1	D2	D3	D4	D5	E1	E2	E3	E4	E5	E6	E7	E8
LEVEL7	M1I325623	Fundamentals of Computer Systems	x	x						x	x	x			
	M1I325617	Programming 1	x	x		x		x		x					
	M1I322908	Fundamentals of Software Engineering	x	x		x			x	x	x				x
	M1I325624	Fundamentals of Network and Cloud Computing	x	x		x		x		x					x
	M1I325625	Database Development	x	x		x				x					
	M1I325668	Integrated Project 1	x		x	x	x	x	x	x	x	x	x	x	x
	M1I325616	Maths for Computing		x						x	x				
LEVEL 8	M2I322952	Object Oriented Analysis & Design	x			x		x		x		x			
	M2I325618	Programming 2	x	x		x		x		x					
	M2I625666	Human Computer Interaction				x	x			x		x			
	M2I225696	Data Structures and Algorithms	x	x		x				x					
	M2I325626	Web Application Development 1	x			x		x		x					
	M2I325669	Integrated Project 2	x		x	x	x	x	x	x	x	x			x
	M3I322913	IT Project Management 1	x	x		x		x		x	x	x		x	x
	M3I325640	Web Application Development 2	x	x		x				x					
	M3I323074	Research Skills and Professional Issues	x		x		x		x	x					x
	M3W225670	Integrated Project 3	x		x	x	x	x	x	x	x	x	x	x	x
Level 3 electives															
	M3I325639	Applications Architecture and Design Patterns	x	x		x		x							
	M3I622934	User Psychology				x				x					
	M3I325687	DevOps	x			x		x				x			
	M3I325644	Mobile Platform Development	x		x	x		x	x	x	x				

Level H		D1	D2	D3	D4	D5	E1	E2	E3	E4	E5	E6	E7	E8
MHW225671	Honours Project	x		x	x	x	x	x	x	x				
MHI325689	Front-end Web Development	x			x				x					
Level H electives														
MHI225680	Machine Learning and Data Analytics	x	x		x				x					x
MHI325698	Business Process Modelling	x	x		x				x					
MHI625672	Advanced HCI	x		x	x	x	x			x	x			
MHI325688	Programming Paradigms				x				x		x			
MHI322925	IT Project Management 2	x	x	x	x	x	x	x	x	x	x			x
MHN222487	Managing Innovation and Creativity	x							x		x		x	
MHI625658	Artificial Intelligence	x		x			x							
MHI325642	Secure Software Development	x	x		x			x	x	x				
MHI325614	Cloud Platform Development				x									x

LEVEL 10

SCQF Level	Module Code	Module Title	F1	F2	F3	F4
LEVEL 9	M3I323077	Industrial Placement	x	x	x	x

BSc/BSc (Hons) Computing
ASSESSMENT LOADING MATRIX

SCQF Level 7									
Module Code	**Module Title**	**Trimester**	**Credits**	**Assessment Weighting**					
				Cw1	**Cw2**		**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%				
M1I325616	Mathematics for Computing	AB	20	40%			60%		
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									

SCQF Level 8									
Module Code	**Module Title**	**Trimester**	**Credits**	**Assessment Weighting**					
				Cw1	**Cw2**		**Exam1 (Exams Office)**	**Ex2 (Exams Office)**	**Ex3 (Class Test)**
M2I325618	Programming 2	A	20	100%					
M2I322952	Object Oriented Analysis & Design	A	20	50%			50%		
M2I625666	Human Computer Interaction	A	20	60%	40%				
M2I225696	Data Structures & Algorithms	B	20	50%			50%		
M2I325626	Web Application Development 1	B	20	100%					
M2I325669	Integrated Project 2	B	20	100%					
EXIT AWARD: Diploma of Higher Education									

SCQF Level 9									
Module Code	**Module Title**	**Trimester**	**Credits**	**Assessment Weighting**					
				Cw1	**Cw2**		**Exam1 (Exams Office)**	**Ex2 (Exams Office)**	**Ex3 (Class Test)**
M3I322913	IT Project Management 1	A	20	50%			50%		

Module Code	Module Title	Trimester	Credits	Cw1	Cw2		Exam1 (Exams Office)	Ex2 (Exams Office)	Ex3 (Class Test)
M3I325640	Web Application Development 2	A	20	70%	30%				
M3I325639	Application Architecture & Design Patterns **(option)**	A	20	50%			50%		
M3I622934	User Psychology **(option)**	A	20	100%					
M3I325687	DevOps **(option)**	B	20	50%	50%				
M3I325644	Mobile Platform Development **(option)**	B	20	50%			50%		
M3I323074	Research Skills & Professional Issues	B	20	30%	70%				
M3W225670	Integrated Project 3	B	20	100%					
EXIT AWARD: Bachelor Degree									

SCQF Level 10

Module Code	Module Title	Trimester	Credits	Assessment Weighting					
				Cw1	Cw2		Exam1 (Exams Office)	Ex2 (Exams Office)	Ex3 (Class Test)
MHI225680	Machine Learning and Data Analytics	A	20	50%	50%				
MHI625672	Advanced Human Computer Interaction **(option)**	A	20	100%					
MHI325698	Business Process Modelling **(option)**	A	20	50%			50%		
MHI325688	Programming Paradigms **(option)**	A	20	50%			50%		
MHW225671	Honours Project	AB	40	100%					
MHI325689	Front-end Web Development	B	20	50%			50%		
MHI325642	Secure Software Development **(option)**	B	20	50%			50%		
MHI625658	Artificial Intelligence **(option)**	B	20	100%					
MHI322925	IT Project Management 2 **(option)**	B	20	50%			50%		
MHI325614	Cloud Platform Development **(option)**	B	20	50%			50%		
MHN222487	Management of Innovation & Creativity **(option)**	B	20	40%	60%				
EXIT AWARD: Bachelor Degree with Honours									