School of Engineering & Built Environment

BSc (Hons) in
Cyber Security and Networks

Programme Specification Proforma (PSP)

2016/2017

GLASGOW CALEDONIAN UNIVERSITY

Programme Specification Pro-forma (PSP)

1. GENERAL INFORMATION

1. **Programme Title:** **BSc (Hons)**
   Cyber Security and Networks

2. **Final Award:** **BSc (Hons)**
   Cyber Security and Networks
   Cyber Security and Networks   (Sandwich)

3. **Exit Awards:** BSc Cyber Security and Networks
   BSc Cyber Security and Networks (Sandwich)

4. **Awarding Body**: Glasgow Caledonian University

5. **Approval Date:** May 2011

6. **Faculty/School:** School of Engineering and Computing

7. **Host Department:** Communication, Networks and Electronic Engineering (CNEE).

8. **UCAS Code:** I121
   I122 (GCU Pathways)

9. **PSB Involvement:** The Institution of Engineering and Technology (IET); The Chartered Institute for IT (BCS)

10. **Place of Delivery:** GCU

11. **Subject Benchmark Statements**: EC^{UK} UK-SPEC

12. **Dates of PS Preparation/Revision**: April 2016

2.   EDUCATIONAL AIMS OF THE PROGRAMME

2.1   Programme Philosophy

The philosophy of the BSc/BSc (Honours) Cyber Security and Networks programme is to provide a stimulating broad-based education through an integrated study of vocational and academic disciplines, providing students with an enjoyable and rewarding experience that places emphasis on active and participative learning. It is based on a broader industrial and business-related curriculum that combines a subset of technical skills with expertise in selected other discipline areas.

The programme aims to provide graduates with cognitive and practical skills and knowledge of emerging theories, methods and principles. The aim is to establish well-rounded graduates knowledgeable of current and emergent technologies, understand legal, ethical and professional responsibilities of practitioners and have a broad awareness of industry. The programme will encourage students' creative thinking, develop visualization skills, expand knowledge, confidence and professional values.

The programme is taught within a wider programme of study related to the discipline of Secure Networked Systems Engineering. Sharing a common first two years within the suite, the programme provides an opportunity to explore specialisms within the general theme of Secure Networked Systems Engineering together with those that are core to the understanding of scientific and engineering disciplines, and technological principles. This provides students with experience of, and the opportunity to transfer to, other programmes within the suite.

The programme forms part of the School and the University's commitment to provide programmes that meet the demands for current and developing technologies in society, business and industry. The aim is to integrate the expertise of staff gained from research, consultancy and scholarly activity into the programme delivery as appropriate. The school has a strong ethos of providing career oriented learning experiences and has established itself as an approved provider for professional certifications, notably from Cisco, Microsoft, Oracle, and the leading Information Security and Digital Forensics firm, 7Safe. We aim to sustain existing, and seek further industrial partnerships that provide access to case studies and projects, work experience and real world problems. The new programme has been developed to address contemporary issues in the field of networking infrastructures.

Application of the programme philosophy will produce professionals who are able to combine established scientific and engineering professional good practice and technical skills with the ability to work effectively in the field of information systems and network infrastructures. The programme equips graduates with the transferable skills required for future academic and personal development.

The programme adopts the philosophy of providing an educational programme that incorporates the professional requirements throughout the module syllabus. The BSc(Hons) pathway provides a broader curriculum which combines a subset of defining technical skills with expertise in selected other discipline areas. The BSc(Hons) exit pathways correspond with the engineer as:

- *Integrator*, by combining selected core technical engineering skills with additional *software development* skills, since increasingly software is the "superglue" of 21st century electronic systems integration.

- *Change Agent*, by combining selected core technical engineering skills with additional *business, leadership and enterprise management* skills.

2.2   General Aims of the Programme

The programme aims to provide graduates with cognitive, practical, self-management skills and knowledge of theoretical, professional, technical, legal and social aspects to be able to pursue careers in Secure Networked Systems Engineering. It aims to provide graduates with:

- A stimulating curriculum which combines study of core technological concepts, theories and principles in addition to specialised knowledge and understanding in the area of cyber security and network infrastructure technologies enabling graduates to make a significant contribution to industry and society as professional practitioners;

- An understanding of scientific and engineering systems approaches encompassing the themes of network engineering, programming for networks, security systems theory, communications networks and the practicalities of network and security systems, including compliance with appropriate standards in order to cope adequately with current and emerging technologies;

- A range of analytical and modelling methods for use in scientific and engineering applications to specify and design secure digital networks and systems;

- Skills to specify, design and implement information systems and security of an organisation to support achievement of its business goals, and to specify and develop elements of a secure networked system, integrating hardware, software and business elements;

- A range of problem solving strategies to enable the application of knowledge;

- The ability to think clearly, rationally, logically, and draw independent conclusions based on analytical and critical assessment of arguments, opinions and data;

- Skills in the use of digital technologies and relevant aspects of information technology;

- An understanding of the legal and ethical issues and concepts relating to digital systems and security, together with the audit procedures for assessing security systems and controls;

- An awareness of the social impact of engineering, including ethical and environmental consequences and considerations.

- The skills that enables effective communication (in writing and orally) at the appropriate business and technical level with users, management, customers and technical specialists;

- An extension of analytical, creative and intellectual skills to enhance and improve judgement in decision making;

- The opportunities to develop interpersonal and key soft skills, through significant exposure to team based projects and problem based learning;

- A sound understanding and awareness of commercial, social and business factors which influence technical solutions to solve problems, through exposure to the CISCO Entrepreneurship Institute;

- A range of general transferable and marketable skills, knowledge relevant to employment in a variety of roles both within the field and associated industries, together with the personal attitudes and determination necessary for professional development and further study to enable the student to make a valuable contribution throughout a successful career.

Programme Structure

YEAR	RELATED MODULES	TRIMESTER	CREDITS
Year 3	M3G405252 IT Project Management 1	A	20
	M3I123698 Network Penetration Testing & Ethical Hacking	A	20
	M2G421127 Designing Secure Networks	B	20
	M3G405244 Advanced Routing	B	20
	M3H620657 Integrated Design Project 3	B	20
	M2G405208 Routing Fundamentals Or M3G405256 Scalable Campus Networking	A	20
Year 4	MHG405297 Honours Research and Project Methods	A	20
	MHG122335 Cloud Systems Security	A	20
	M3M121130 Regulating the Information Society	B	10
	MHH120045 Simulating Multimedia Networks	B	20
	MHH620649 Professionalism in Practice	AB	10
	MHH106454 Honours Project	AB	40

8. ASSESSMENT REGULATIONS

The Glasgow Caledonian University Assessment Regulations
http://www.gcu.ac.uk/registry/secretariat/documents/UniversityAssessmentRegulations2009_10_001.pdf
apply to this programme with the exception of the previously approved (Exceptions Committee - September 2007) Engineering Framework specific assessment regulations:

1) The classification of an Honours award as described in section 7.1.,

and

2) A progression 'attainment filter' mechanism to satisfy Professional Body requirements in section 7.2.

8.1 Framework Specific Regulations for the Classification of Honours

The programme (and suite) adopts the Engineering Framework specific regulation (35) (Exceptions Committee approval - September 2007), with regard to the honours classification for the proposed programmes subsequently developed within the formerly approved (April 2007) Engineering Framework, and is consistent with the programme specific regulations currently in place within other BSc (H) and BSc(H) engineering programme suites:-

8.1.1 Award of Honours

The following replaces University Regulations 35, 38, 39 & 40

35a. (To replace reg. 35)

The award of Honours will normally be made on the basis of an overall amalgamated aggregate average of a student's performance in both the Level 3 and Level 4 modules as defined within the programme delivery structure irrespective of the actual level of any particular module studied at these levels.

This final overall amalgamated aggregate will be determined from:

1) a 25% weighting obtained from the aggregated Level 3 overall marks for all modules studied at that level
and

2) a 75% weighting from the aggregated Level 4 overall marks for all modules studied at that level.

38a. (To replace reg. 38)

The Engineering Framework Assessment Regulations specifies the criteria to be achieved for candidate to qualify for any particular Honours classification using the following overall amalgamated aggregate average marks as a guide in the first instance:

First Class Honours	>70%
Second Class (upper division) Honours	60-69%
Second Class (lower division) Honours	50-59%
Third Class Honours	40-49%

39a. (To replace reg. 39)

Where the overall amalgamated aggregated average mark is within 3% of attaining the 50%, 60% and 70% boundaries (i.e. 47-49%, 57-59%, 67-69%), the Assessment Board will also take into account, for each such individual, his or her Honours profile and be prepared to exercise academic judgement to the benefit of the student where deemed appropriate. In the event of overall amalgamated aggregated average marks being recorded as a fraction, e.g. 59.2, such marks will be rounded up to the next whole number, i.e. 59.2 to 60.

40a. (To replace reg. 40)

Classification in terms of the profile of an individual's performance will be judged solely on those level H modules studied within the final level 4 year of any programme delivered within the Engineering Framework and can be determined as follows:
Each module will be marked in accordance with the following scheme:

First class		70-100%
Second class (upper division)		60-69%
Second class (lower division)		50-59%
Third class		40-49%
Failure	less than	40%

Assuming the assessment of an Honours candidate is based on six level H modules or at least a minimum of 90 credits at level H, to attain a particular class of degree (first, upper second (2i), lower second (2ii), third) a candidate should normally:

i)   have reached that standard or higher in a minimum of four modules
ii)   have a performance in no more than one module which is more than one division below that standard
iii)   have attained a pass mark in all modules. A failure in one module or two half modules only will be compensated at the discretion of the Assessment Board for the award of second and third class honours.

8.1.2   Progression 'Attainment Filter' Regulation

The progression regulations for Level 1 to Level 2, and for Level 2 to Level 3, are in compliance with the University Regulations 7-i.

The progression regulations for Level 3 to Level 4 of professionally accredited programmes are described below (Exceptions Committee approval - September 2007):

Professional bodies have for many years only accredited those students who have achieved/attained an honours classification of 2:2 or better. Custom and practice within UK Universities is to embrace a progression attainment filter which is set to the expected level of 50%. This enables students to be aware of the expected performance levels required of them towards the latter stages of the programme. As a consequence the Engineering Framework (approved April 2007) introduced (Exceptions Committee approval - September 2007) an attainment filter at the end of both year 3 prior to progression to the BSc (Hons).

The special regulation (7–i) (Exceptions Committee approval - September 2007) for this attainment filter is as follows:

Level 3 to level 4 of the professionally accredited programme

Students will progress to the BSc (Hons) level of the Engineering Framework if they have satisfied the Assessment Board that they have been awarded 360 credits and have achieved an overall aggregate average mark of 50% for Level 3 (2:2 'equivalent' classification). Failure to achieve these criteria will result in either the award of an unclassified BSc degree, or other appropriate exit award, dependent on attainment.

Students awarded the unclassified BSc degree as described above will be able to use the 360 credits towards the option pathway for possible attainment of a BSc (Hons) degree in Engineering upon subsequent completion of the necessary additional 120 credits required to satisfy the SCQF 480 credit accumulation for an Honours degree which will be awarded in compliance with the existing University Regulations (35-47).