Programme Specification

Programme Title: BSc (Hons) Computer Networks and Security

Awarding Institution:	University of Bolton		
Teaching Institution:	University of Bolton		
Division and/or Faculty/Institute:	Faculty of Arts and Media Technologies		
Professional accreditation	Professional body	Professional body URL	Status of graduates
	-	-	-
Final award(s):	BSc (Hons)		
Interim award(s)	N/A		
Exit or Fallback award(s)	Certificate of Higher Education in Computer Networks and Security Diploma of Higher Education in Computer Networks and Security		
Programme title(s)	Computer Networks and Security		
UCAS Code	G435		
JACS Code	G420 Networks & Communications		
University Course Code(s)	Full time: COM0014 Part time: COM5016		
QAA Benchmark Statement(s)	Computing		
Other internal and external reference points	QAA Academic Infrastructure, including the Framework for Higher Education Qualifications and the Code of Practice UK Quality Code for Higher Education University of Bolton awards framework BCS Guidelines on Course Accreditation, Sept 2010		
Language of study	English		
Mode of study and normal period of study	Full time – 3 years Part time – 4.5 years		

Admissions criteria

You should have a minimum of two GCE A2-level passes (or equivalent), including one from IT, English, Mathematics or a Science; and five GCSEs at grade C or above (or equivalent), including English and Mathematics.

If English is not your first language you will need to complete a Secure English Language Test at IELTS 6.0 or equivalent.

If English is not your first language you will also need IELTS 6.0 (or equivalent)

Students with a technical computing background may be accepted on to the course, after attending an interview.

Additional admissions matters

N/A

Fitness to practise declaration

N/A

Aims of the programme

The principal aims of the programme are to:

1. provide students with a broad education in computer networks and security, with a special emphasis on the technical specification, design, implementation and maintenance of computer networks and security systems.
2. ensure that the students have access and exposure to the latest innovations and technology in computer networks and security systems.
3. equip students with the skills and knowledge necessary to pursue a successful career in a variety of areas such as IT, computer networks, security and telecommunications industries.
4. gain familiarity with a wide range of computer network deployments. Studies will cover networks used in such diverse areas as banking, utilities, hospitals, public telecoms and all aspects of industry from small to large enterprises.
5. prepare students for direct employment or postgraduate study.
6. develop and improve interpersonal and communications skills, particularly writing formal reports and giving presentations, as these skills are essential in the computer networks and security industry.
7. equip students with the knowledge necessary to understand the ethical and environmental issues they will encounter in industry in general.

Distinctive features of the programme

The course focuses on the design, configuration, management and support of all types of computer networks. Intrinsic to the professional operation of computer networks is the need to operate securely to ensure data is maintained at all times against all possible sources of disruption such as operator error, equipment malfunction, hacking, organised crime or interference by foreign governments.

Links with businesses provide 'live briefs' for coursework assignments to ensure students are working on meaningful projects. The programme leader maintains active links with businesses and former students who are now working in the industry to establish opportunities for work placements during vacation periods and after finishing the course.

In the first two years of study, students will register with the Cisco Networking Academy to enrol for Cisco Certified Networking Associate (CCNA) study programme. A Cisco certificate is awarded after successfully completing each of the four parts. Having completed the CCNA study programme, students can choose to sit the Cisco CCNA examination at an external testing centre. A separate charge is payable to CISCO for the external exam.

The first year of the course is common to all programmes in the Computing group, allowing flexible progression into the second year. This flexibility allows students the possibility of transferring to one of the other BSc(Hons) programmes in the Computing group at the end of Year 1. In the second year students study communications, wireless networking, mobile communications and voice/data integration and network architectures. In the third year the emphasis is on independent, research-based work; the undertaking of a major project and the design and management of large, secure enterprise networks.

The classes are small so there is plenty of interaction with the lecturers and questions can always be answered. Guest speakers provide relevant, up-to-date input from practitioners in the industry.

The course is supported by dedicated network laboratories which are firewalled to allow students to experiment and evaluate attack tools without worrying about disrupting the wider university network. Many of the computing facilities can be accessed across the internet from home, allowing students to work on their assignments whenever and wherever they choose.

Every company has some form of digital infrastructure that supports the day-to-day running of the business. Graduates may choose to seek employment in a number of areas including large corporate and small to medium-sized enterprises (SMEs), large government organisations, local authorities, health authorities, network providers, internet service providers.

Graduates of the BSc(Hons) Computer Networks & Security will hold an internationally recognised qualification.

Programme learning outcomes

K. Knowledge and understanding

On completion of the programme successful students will be able to demonstrate systematic knowledge and understanding of:

1. business and professional aspects of the industry.
2. the gathering, processing, storage and management of data.
3. the development of structured software and its testing and maintenance.
4. the stages of the systems life cycle, and the use of appropriate tools and techniques therein.
5. the theory, concepts and principles of computer networks and security systems.
6. research methods and the contribution of a literature review to a project or investigation within a managed timescale.

C. Cognitive, intellectual or thinking skills

On completion of the programme successful students will be able to demonstrate the ability to:

1. demonstrate knowledge and understanding of essential facts, concepts, principles and theories relating to computing and computer applications.
2. identify and solve problems using a systematic approach to reach a solution.
3. investigate the existing body of knowledge in a particular field.
4. apply concepts and evaluate alternatives in designing new products and services.
5. critically analyse findings, reflect and then apply skills and knowledge to new areas.
6. Integrate a variety of investigative skills, synthesise and then apply to problem solving.

P. Practical, professional or subject-specific skills

On completion of the programme successful students will be able to demonstrate the ability to:

1. produce a systems requirements specification, including user interactions, interfaces and documentation.
2. understand the potential risks, security and safety aspects appropriate to the field of study, including risk.
3. select, and configure appropriate hardware and software to implement a secure networked computer system design using simulation where appropriate.
4. use appropriate theory and practice, for the specification and design of computer networks and security systems.
5. plan, manage and control a project, taking account of professional and ethical issues.
6. critically appraise, justify and select hardware and software for a secure computer network system.

T. Transferable, key or personal skills

On completion of the programme successful students will be able to demonstrate the ability to:

1. communicate effectively both orally and in writing, involving quantitative and qualitative aspects.
2. manage their own learning and development including time management, organisational skills and self appraisal.
3. prepare for employment in the industry and recognise the need for continuing professional development.
4. carry out a substantial piece of independent work and undertake a critical evaluation.

Programme structure

The BSc(Hons) Computer Networks and Security programme involves completing 120 credits at HE4, 120 credits at HE5 and 120 credits at HE6.

Module Code	Module title	Core/ Option/ Elective (C/O/E)	Credits	Length (periods)
CPU4000	Core Skills	C	20	1
CPU4001	Website Production	C	20	1
CPU4002	Information Systems & Databases	C	20	1
CPU4003	Introduction to Programming	C	20	1
CPU4004	Computer Platforms	C	20	1
CPU4005	Networking Fundamentals	C	20	1
CPU5000	Level 2 project	C	20	1
CPU5003	Unix	C	20	1
CPU5009	Wireless Networks and Security	C	20	1
CPU5010	Routing Fundamentals	C	20	1
CPU5011	Network Architecture	C	20	1
CPU5012	Wide Area Networks	C	20	1
CPU6000	Professional issues in Computing	C	20	1
CPU6001	Major Project	C	40	2
CPU6004	Network Security	C	20	1
CPU6006	Enterprise Infrastructure, Management & Design	O	20	1
CPU6009	Network Management	O	20	1
CPU6010	Network Design & Integration	O	20	1
CPU6011	Advanced Operating Systems	O	20	1

Learning and teaching strategies

The programme uses a blended learning approach, combining face to face sessions with online work as appropriate. The learning and teaching methods typically used by tutors include, lectures, seminars, workshops, tutorials, e-learning, online sessions and support.

A significant amount of personal study time is expected to be undertaken by the student comprising, for example, background reading, assignment work, preparation for seminars and revision for examinations.

Active learning is promoted throughout the course, e.g. theoretical concepts being delivered in a framework of lectures, practical demonstrations and workshops applying theory to practice using activity based assignments.

Learning activities (KIS entry)

	Course Year 1	2	3
Scheduled learning and teaching activities	25%	25%	25%
Guided independent study	75%	75%	75%
Placement/study abroad	0%	0%	0%

Assessment strategy

Assessment tasks are linked to the learning outcomes of each module and are completed before the end of the module.

Module assessments are typically either coursework or examination or a combination of both. In the second and final years formal written examinations take place during the last week of the module delivery period. Other types of assessment may include in-class tests, coursework assignments, presentations, projects.

Formative Assessment, which does not contribute to the final mark, is given to help the student improve their work in future. It may be given to the student verbally/written/online.

Summative assessment, which does contribute towards the final result, is normally given in writing to the student, with the opportunity for the student to receive more detailed verbal explanation.

Assessment methods (KIS entry)

	Course Year 1	2	3
Written exams	0%	17%	17%
Coursework	84%	66%	75%
Practical exams	16%	17%	8%

Assessment regulations

The University of Bolton Assessment Regulations for Undergraduate Modular Programmes apply.

Grade bands and classifications

Grade Description	Mark %	Honours Degree Classification
Work of exceptional quality	70+	i
Work of very good quality	60-69	ii.i
Work of good quality	50-59	ii.ii
Work of satisfactory quality	40-49	iii
Borderline fail	35-39	
Fail	Below 35	

Honours classification

You will normally be awarded the honours classification resulting from the application of either Rule ACM20 or Rule ACM6.

Rule ACM20

A weighted average of the marks from modules worth a total of 200 credits at Levels HE5 and HE6 combined, including the marks from modules worth no more than 80 credits at least at Level HE5 (weighted 30 percent) and marks from modules worth at least 120 credits at Level HE6 (weighted 70 percent), which represent the best marks achieved by you at those Levels.

Where the average falls unequivocally into one of the following bands: 48.00 - 49.99, 58.00 - 59.99, 68.00 - 69.99; and you have achieved marks clearly in an honours classification category higher than their average for modules worth at least 110 credits, then you will be awarded an honours degree in the classification category one higher than that indicated by your average.

Rule ACM6 (an alternative if you do not have sufficient marks at Levels HE5 and 6 to apply ACM20)

A simple average of the equally weighted marks from modules worth 120 credits at Level HE6 which represent the best marks achieved by you at that Level.

Where the average falls unequivocally into one of the following bands: 48.00 – 49.99, 58.00 – 59.99, 68.00 – 69.99; and you have achieved marks clearly in an honours classification category higher than their average for modules worth at least 70 credits, then you will be awarded an honours degree in the classification category one higher than that indicated by their average.

Where you have marks available for fewer than 120 credits at Level HE6, honours classification shall normally be based solely on a simple average of the available marks for modules at Level HE6, subject to there being marks for a minimum of 60 credits awarded by the University. Upgrading of the honours classification will not normally be available where there are marks available for fewer than 120 credits at Level HE6, unless this is explicitly approved.

Role of external examiners

External examiners are appointed for all programmes of study. They oversee the assessment process and their duties include: approving assessment tasks, reviewing assessment marks, attending assessment boards and reporting to the University on the assessment process.

Support for student learning

- The programme is managed by a programme leader
- A more rounded and consolidated learning approach is achieved through the regular use of excellent laboratory facilities. These practical sessions are scheduled to coincide with the theoretical lecture based studies.
- Technician support is available outside of scheduled class times. Students find this particularly helpful on project work
- An induction programme introduces students to the University and their programme
- Each student has a personal tutor, responsible for support and guidance
- Personal Development Planning (PDP) integrated into all programmes
- Feedback on formative and summative assessments
- A Student Centre providing a one-stop shop for information and advice
- University support services include housing, counselling, financial advice, careers and a disability
- A Chaplaincy
- Library and IT services
- Student Liaison Officers attached to each Faculty
- The Students' Union advice services
- Faculty and Programme Handbooks which provide information about the programme and University regulations
- The opportunity to develop skills for employment

- English language support for International students
- Placement opportunities may be available
- Access and use of virtual learning environments for each module

Methods for evaluating and enhancing the quality of learning opportunities

- Programme committees with student representation
- Module evaluations by students
- Students surveys, e.g. National Student Survey (NSS), Postgraduate Taught Experience Survey (PTES)
- Annual quality monitoring and action planning through Programme Quality Enhancement Plans (PQEPs), Data Analysis Report (DARs) Subject Annual Self Evaluation Report (SASERs), Faculty Quality Enhancement Plans (FQEPs), University Quality Enhancement Plan (UQEP)
- Peer review/observation of teaching
- Professional development programme for staff
- External examiner reports
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Other sources of information

Student portal (http://www.bolton.ac.uk/Students/)
Students Union (http://www.ubsu.org.uk/)
Faculty or similar Handbook (http://www.bolton.ac.uk/amt)
Programme Handbook
Student Entitlement Statement
Module database
Moodle (for the programme)
External examiners reports
http://www.bolton.ac.uk/Quality/QAEContents/ExternalExaminersReports/Home.aspx

Document control	
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Approved by:	Sarah Riches Chair University Validation Panel
Date approved:	September 2012
Effective from:	September 2012
Document History:	

Learning outcomes map

Module title	Mod Code	Status C/O/E	K1	K2	K3	K4	K5	K6	C1	C2	C3	C4	C5	C6	P1	P2	P3	P4	P5	P6	T1	T2	T3	T4
Core Skills	CPU4000	**C**	DT					DT	DTA		DTA										DTA	DTA	DT	
Website Production	CPU4001	**C**	D									DTA			DTA			DTA			DA			
Information Systems and Databases	CPU4002	**C**	D	DTA		DT	DT		DTA	DTA		DTA			DT		DTA				DTA	DT		
Introduction to Programming	CPU4003	**C**	D	DT	DTA	DT	DT		DT						DT						D			
Computer Platforms	CPU4004	**C**	D	DT					DTA						DT	DTA		D			D			
Networking Fundamentals	CPU4005	**C**	D						DTA						DT	DTA	DTA	DTA			D			
Level 2 Project	CPU5000	**C**	DTA	DT		DTA	DTA	DTA	DT	DTA	DTA	DTA	D	DTA	DTA		DTA		DTA		DA	DTA	DTA	D
Unix	CPU5003	**C**	D			DT	D		D	D	D					DTA	DTA	D			D			
Wireless Networks and Security	CPU5009	**C**	D				DTA	D		D					D	DTA	DTA	DTA			D			
Routing Fundamentals	CPU5010	**C**		D			DTA			D						DT	DTA	D			D			
Network Architecture	CPU5011	**C**		D			DTA			D						DT	DTA	DT			D			
Wide Area Networks	CPU5012	**C**					DTA			D						DTA	DTA	DTA			D			
Professional Issues in Computing	CPU6000	**C**	DTA			DTA	DTA	DTA			DTA		DTA			DT			DTA		DTA		DTA	DTA
Major Project	CPU6001	**C**	DTA		DA	DA	DA	DTA		DA	DA	DA	DA	DTA	DTA		DA		DTA	DTA	DA	DA	D	DTA
Network Security	CPU6004	**C**	D				DTA	D					D	D			D	D		DTA				DTA
Enterprise Infrastructure, Management & Design	CPU6006	**O**	D	D			DT	D			D		D	D	D		D	D		DTA		DTA		DTA
Network Management	CPU6009	**O**	D					D			D		DTA	DTA			D	D		DTA				DTA
Network Design and Integration	CPU6010	**O**	D					D			D		DTA	DTA	D		D	D		DTA				DTA
Advanced Operating Systems	CPU6011	**O**		D				D				D					D	D		D				DTA

Key

K = Knowledge and understanding
C = Cognitive, Intellectual and thinking skills
P = Practical, professional and subject specific skills
T = Transferable, key or personal skills.

D = Developed, T = Taught, A = Assessed

Module listing

Module title	Module Code	Level	Credits	Type	Core/ Option /Elective C/O/E	Assessment 1			Assessment 2		
						Assessment type	Assessment %	Add Y if final item	Assessment type	Assessment %	Add Y if final item
Core Skills	CPU4000	HE4	20	STAN	CORE	CW	100	Y			
Website Production	CPU4001	HE4	20	STAN	CORE	CW	50		CW	50	Y
Information Systems & Databases	CPU4002	HE4	20	STAN	CORE	CW	100	Y			
Introduction to Programming	CPU4003	HE4	20	STAN	CORE	PRA	30		CW	70	Y
Computer Platforms	CPU4004	HE4	20	STAN	CORE	CW	50	Y	CW	50	
Networking Fundamentals	CPU4005	HE4	20	STAN	CORE	PRA	50		PRA	50	Y
Level 2 Project	CPU5000	HE5	20	STAN	CORE	CW	50		CW	50	Y
Unix	CPU5003	HE5	20	STAN	CORE	CW	50		EX	50	Y
Wireless Networks and Security	CPU5009	HE5	20	STAN	CORE	CW	50		EX	50	Y
Routing Fundamentals	CPU5010	HE5	20	STAN	CORE	PRA	50		EX	50	Y
Network Architecture	CPU5011	HE5	20	STAN	CORE	PRA	50		EX	50	Y
Wide Area Networks	CPU5012	HE5	20	STAN	CORE	PRA	50		EX	50	Y
Professional Issues in Computing	CPU6000	HE6	20	STAN	CORE	PRA	50		CW	50	Y
Major Project	CPU6001	HE6	40	PROJ.	CORE	CW	100	Y			
Network Security	CPU6004	HE6	20	STAN	CORE	CW	50		EX	50	Y
Enterprise Infrastructure, Management & Design	CPU6006	HE6	20	STAN	OPTION	CW	50		CW	50	Y
Network Management	CPU6009	HE6	20	STAN	OPTION	CW	50		EX	50	Y
Network Design and Integration	CPU6010	HE6	20	STAN	OPTION	CW	100	Y			
Advanced Operating Systems	CPU6011	HE6	20	STAN	OPTION	CW	50		EX	50	Y

Bolton Key Core Curriculum requirements

Module Title	Module Code	C/O/E	Employability											Bolton Values		
			PDP	Communication	Team work	Organisation & Planning	Numeracy	Problem solving	Flexibility & adaptability	Action planning	Self awareness	Initiative	Personal impact & confidence	Inter-nationalisation	Environmental sustainability	Social, public and ethical responsibility
Core Skills	CPU4000	C	D,T,A	D,T,A	D,T	D,T,A	D	D,T,A	D	D,T	D	D	D,T	D	D	D,T,A
Website Production	CPU4001	C		D,A	D	D,T,A		D,T,A	D	D,T,A		D		D		D
Information Systems & Databases	CPU4002	C		D,A		D,T,A	D	D,T,A	D	D,T,A		D		D		D
Introduction to Programming	CPU4003	C		D,A		D,T,A	D	D,T,A	D	D,T,A		D		D		D
Computer Platforms	CPU4004	C		D,A		D	D	D,T,A	D	D		D		D	D	D
Networking Fundamentals	CPU4005	C		D,A		D,T,A	D,T,A	D,T,A	D	D		D		D		D
Level 2 Project y	CPU5000	C	D,T,A	D,T,A	D	D,T,A	D	D,T,A	D	D	D	D	D	D	D	D
Unix	CPU5003	C		D,A		D,T,A		D,T,A	D	D		D		D		
Wireless Networks and Security	CPU5009	C		D,A	D	D	D,T,A	D,T,A	D	D		D	D	D	D	D
Routing Fundamentals	CPU5010	C		D,A	D	D,T,A		D,T,A	D	D		D	D	D	D	D
Network Architecture	CPU5011	C		D,A		D,T,A		D,T,A	D			D	D	D	D	D
Wide Area Networks	CPU5012	C		D,A		D,T,A		D,T,A	D	D		D	D	D	D	D
Professional Issues in Computing	CPU6000	C	D	D,A	D,T,A	D,A		D,A	D	D	D	D	D	D	D	D,T
Major Project	CPU6001	C	D,T	D,A		D,T,A	D	D,A	D	D,T,A	D	D	D	D	D	D
Network Security	CPU6004	C		D,A		D		D,T,A	D	D		D	D	D		D
Enterprise Infrastructure, Management & Design	CPU6006	O		D,A		D,A		D,T,A	D	D		D	D	D	D	D
Network Management	CPU6009	O		D,A	D,T,A	D	D,T,A	D,T,A	D	D		D	D	D	D	D
Network Design and Integration	CPU6010	O		D,A	D	D,T,A		D,T,A	D	D		D	D	D	D	D
Advanced Operating Systems	CPU6011	O		D,A	D	D,T,A		D,T,A	D	D		D	D	D	D	D

Key

D = Developed, T = Taught, A = Assessed

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Date: 12th July 2012