PROGRAMME SPECIFICATION

1. Key Information

Programme Title:	FDSc Cyber Security Engineer
Awarding Institution:	Buckinghamshire New University
Teaching Institution(s):	Buckinghamshire New University
Subject Cluster:	Computing
Award Title (including separate Pathway Award Titles where offered):	FDSc Cyber Security Engineer
Pathways (if applicable)	N/A
Other award titles available (exit qualifications):	Certificate of Higher Education
FHEQ level of final award:	5
Accreditation details:	None
Length of programme:	2 years
Mode(s) of Study:	Full Time
Mode of Delivery:	In person (on-site) delivery
Language of study:	English
QAA (Quality Assurance Agency) Subject Benchmark(s):	The IfATE Cyber Security Technologist Occupational Standard ST0121 (2014, updated 2021)
Other external reference points (e.g., Apprenticeship Standard):	British Computer Society
Course Code(s):	
UCAS Code(s):	
Approval date:	
Date of last update:	N/A

2. Programme Summary

This is a two-year practice-based Foundation Degree Programme that aims to prepare you for a career as a Cyber Security Engineer. Upon graduation, you will find that this programme provides you with employment opportunities in a variety of exciting occupations; examples of these opportunities could include Financial Services, Computer Gaming, Retail, Transport, Security, Health Service and Defence. Potential careers could range from organisations assisting large multinational, public-sector bodies, and government projects with multi-billion-pound budgets at one end of the scale to small consultancy firms at the other end.

The programme integrates both academic and practice-based learning and combines significant practical skills (with some focus on professionally relevant material from companies such as Microsoft, Amazon, or Cisco), with work-related experience and theoretical underpinning. The programme is designed around several core principles including accessibility, articulation, progression, flexibility, employer involvement and partnership.

The programme is developed around themes that have general and specific relevance to various potential employment destinations. These themes are:

- Theme 1: IT applications and security basics
- Theme 2: Computers and networks
- Theme 3: Website development and related applications
- Theme 4: Continuing personal and professional development

The programme will provide you with the appropriate skills and knowledge to pursue several careers within the Computing & IT industry, including IT Support, Cyber Security Software Development, Network Management and Retail. The programme will place great emphasis on developing `learner' employability skills, thus providing you with the competence and confidence to succeed in this demanding field.

3. Programme Aims and Learning Outcomes

The Bucks Graduate Attributes focus on the development of innovative leaders in professional and creative capacities, who are equipped to operate in the 21st Century labour market and make a positive impact as global citizens. These attributes are developed throughout the programme.

Programme Aims

This programme aims to:

1 Enable learners to become conversant with technical decisions relating to commercial computing and diverse types of technologies

2 Promote learner awareness of some of the challenges and opportunities presented by the Information Age and the ubiquity of computing in our daily lives

3 Develop learners who can analyse problems, devise solutions, and select the most appropriate computer-based option

4 Enhance the appreciation on the part of the learner of the professional, moral, and ethical issues involved in IT as well as a degree of adaptability in the rapidly changing environment

5 Create learners who can take responsibility for planning, directing, recording, and achieving their own personal and professional development

Programme Learning Outcomes

Knowledge and Understanding (K)

On successful completion of the programme, you will be able to:

ID	Learning Outcome

K1	Describe the relationship between an organisation's business needs and its requirements for information security.
K2	Outline external security requirements and security standards relevant to an organisation.
K3	Demonstrate understanding of the legal and regulatory requirements that could affect organisation security policies and the processes and techniques used in verifying compliance against security policies, standards, legal and regulatory requirements.
K4	Summarise the common technical security controls available to prevent, detect and recover from security incidents and to mitigate risk.

Analysis and Criticality (C)

On successful completion of the programme, you will be able to:

ID	Learning Outcome
C1	Determine a gap analysis against relevant external policies, standards and guidelines and initiate remedial action where appropriate.
C2	Categorise the technical, physical, personnel and procedural risks associated with third party relationships.
C3	Formulate relevant security policies and risk profiles to create secure architectural solutions that mitigate the risks and conform to legislation.
C4	Evaluate information processes to ensure they meet the security criteria (requirements or policy, standards, and procedures).
C5	Illustrate the need for and implement processes for establishing business continuity.

Application and Practice (P)

On successful completion of the programme, you will be able to:

ID	Learning Outcome
P1	Develop the overall security governance process ensuring security policies support compliance with corporate governance practices.
P2	Develop information risk management strategies to reduce risk.
P3	Apply an appropriate penetration testing methodology on information processes against relevant policies, whilst maintaining security records and documentation in accordance with Security Operating Procedures.
P4	Demonstrate that information processes meet the security criteria (requirements or policy, standards, and procedures).

Transferable skills and other attributes (T)

On successful completion of the programme, you will be able to:

ID	Learning Outcome
T1	Build an information risk awareness culture within an organisation.
T2	Develop opportunities for introducing more effective secure business and operational processes.
T3	Derive information security programmes and co-ordinating security activities across the organisation.
T4	Support the Change Management process to ensure that vulnerabilities are mediated.
T5	Develop plans to communicate with internal stakeholders, external stakeholders, and the media.

Graduate Attributes

The BNU Graduate Attributes of: Knowledge and its application; Creativity; Social and ethical awareness and responsibility; and Leadership and self-development focus on the development of innovative leaders in professional and creative capacities, who are equipped to operate in the 21st Century labour market and make a positive impact as global citizens.

On this programme, graduate attributes are developed through the practical application of analysis skills, mathematical principles, algorithmic intricacy, and security techniques in a variety of creative situations, including set real-world scenarios and life-critical case studies. (C2, P3, K3, T3, P2, C1, T5). Analysis, evaluation, and implementation are embedded throughout the programme in both individual and group tasks and through the appraisal of current and past Cyber Security Technologist-based systems and in the way, feedback is given to your own personal work. (T1, T3, C4). An understanding and awareness of operational applications fostered with a strong focus given to applying and assessing a cross-section of security methodologies. (K3, T3). This nurtures the self-efficacy to develop your own work opportunities and to adapt to a constantly evolving technological work environment (C4, K1, K2, C5, K4). Through analysing the historical, social, and cultural contexts of operational Cyber Security Technologist-based systems, together with a growing social awareness is formed to ensure professional and ethical values. These are developed alongside the confidence to specify, design, implement and manage new and existing real-world, life critical security systems, whilst appreciating engineering disciplines of quality control and configuration management. (C1, C4, P3, P4, T3, T4).

4. Entry Requirements

The University's general entry requirements will apply to admission to this programme with the following additions / exceptions:

- Learners will normally have achieved 88-128 UCAS points; however, every application will be assessed on its individual merits.

If you do not meet the entry requirements you may, if you have relevant professional experience, still be invited for interview, where you will be required to demonstrate the necessary knowledge and understanding for entry onto the programme.

Previous study, professional and / or vocational experiences may be recognised as the equivalent learning experience and permit exemption from studying certain modules in accordance with us accreditation of prior learning (APL) process.

5.Programme Structure

Level	Modules (Code, Title, and Credits)	Exit Awards
Level 4	COM4013 Cyber Threat and Risk Management (20) COM4009 Computer Architectures (20) COM4010 Networking (20) COM4008 Programming Concepts (20) COM4012 Computing Computational Fundamentals (20) **Opportunity modules:** You must choose 2 x 10 credit Level 4 Opportunity modules from the Opportunity module catalogue www.bnu.ac.uk/oppmodules	**Certificate of Higher Education**, awarded on achievement of 120 credits at Level 4
Level 5	COM5007 Network Systems (20) COM5015 Information Security (20) COM5016 Malware and Cyber Security Management (20) COM5017 Digital Forensics Investigation and Penetration Testing (20) COM5018 Data Essentials (20) **Opportunity modules:** You must choose 2 x 10 credit Level 4 Opportunity modules from the Opportunity module catalogue www.bnu.ac.uk/oppmodules	

6. Learning, Teaching and Assessment

The teaching, learning and assessment strategies have been designed to ensure that there is progression from Level 4 where you are highly reliant upon your tutors for your learning to an advancement in skills in Level 5 where you will take more responsibility for your own learning in and out of the classroom. At Level 5, you are expected to take a more active role in your own learning and future careers, thus the theoretical knowledge gained at Level 4 will be applied to simulated and real-world examples to reflect industry practice. Teaching and learning embrace a learner-centred approach, embracing the concept of learner as producer. Group work and discussion exercises will not only give you the experience of working with others but will also facilitate a collaborative and supportive learning environment where you can learn from your peers.

To effectively maintain engagement with your studies, a variety of teaching and learning methods will be employed. This is thoughtfully based upon the traditional model of lecture, tutorial, seminar, workshops, group activities, discussions, demonstrations, and practical sessions. There will be a carefully integrated approach within a module, with an emphasis upon learning by doing. For example, a short demonstration on the use of computer hardware or software will be immediately followed by an opportunity for you to get hands-on experience and practice; an introduction to a theoretical concept will be combined with a

practical exercise to explore or apply the concept within the framework of a real-world problem. A session will contain some coherent combination of elements to encourage your learning and understanding. This thinking will be extended to a more holistic level to show links and progression between those modules forging programme themes across Level 4 and Level 5.

Taught sessions will be supported by handouts, videos/DVDs, and other materials; tutors will provide references to supplementary study materials in the library and on websites. Tutors will use any appropriate technologies to support your learning, for example a VLE (Virtual Learning Environment) for interfacing with learners off campus. On this programme there is a strong focus to develop digitally enabled learners that enhances their employability skills.

Technology is a fundamental key theme interwoven into the programme for learners to advance their digitally enabled skills and work ready for rapid change as we are on the cusp of the 4th Industrial Revolution. Discussions will be around technology in the workplace and what future technology may be available not only in the next 2-3 years but in the next 10-15 years.

Assessment Methods

Authentic assessments which are informal and formal are provided, for example presentations, groupwork, peer assessments, simulations, portfolios, podcast, practical assignments, articles, debates, assessing skills that will be needed in the workplace like real life scenarios, interviews, demonstrations, journals, problem solving and difficult discussions, mirroring real-world etc. There is assessment that is based on real life experiences within your duties.

Informal assessments are applied throughout the delivery of teaching and basic training through stretch and challenge Q&A, quizzes, role play, presentations, peer assessment and discussions/debates to ensure aims and objectives are checked, consolidated and knowledge, skills and behaviours are built upon within your development and application. Prior knowledge is revisited with reinforcement of learning to enable you to advance to their next level of learning.

Assessments will be appropriate to the task, achievable, motivating and vocationally focussed and will form a constructive part of the learning process. They will develop general transferable skills as well as academic skills.

Assessments at Level 4 will be focused on ensuring you have the underlying knowledge and skills in preparation for Level 5. Many of the modules will emphasise using equipment and gaining practical skills to aid development of theory and knowledge at higher levels.

Level 5 assessments will be more demanding, with the emphasis still on development of knowledge and skills, but now encouraging learning at greater depth. You will be expected to take more independent responsibility for finding solutions to problems and for devising the necessary approach for tackling assignments. The emphasis will shift towards summative assessment.

Throughout your course you will receive feedback that will clearly indicate the strengths and weaknesses of your work to enable you to use this in further work you submit.

Contact Hours

You can expect to receive approximately 12 hours of scheduled learning activities per week. These may include lectures, seminars, workshops, practical sessions, or placement hours. A full breakdown of contact hours can be found in individual module descriptors.

7. Programme Regulations

This programme will be subject to the University's "Regulations for Taught Programmes.

8. Support for learners

The following systems are in place to support you to be successful with your studies:

- The appointment of a personal tutor to support you through your programme
- A programme handbook and induction at the beginning of your studies
- Library resources, include access to books, journals, and databases – many of which are available in electronic format – and support from trained library staff
- Access to Blackboard, our Virtual Learning Environment (VLE), which is accessible via PC, laptop, tablet, or mobile device
- Access to the MyBNU portal where you can access all University systems, information, and news, record your attendance at sessions and access your personalised timetable
- Academic Registry staff providing general guidance on university regulations, exams and other aspects of students and course administration
- Central student services, including teams supporting academic skills development, career success, student finance, accommodation, chaplaincy, disability, and counselling
- Support from the Bucks Students' Union, including the Students' Union Advice Centre which offers free and confidential advice on university processes.

9. Programme monitoring and review.

BNU (Buckinghamshire New University) has several ways for monitoring and reviewing the quality of learning and teaching on your programme. You will be able to comment on the content of their programme via the following feedback mechanisms:

- Formal feedback questionnaires and anonymous module 'check-ins'
- Participation in external surveys.
- Programme Committees, via appointed student representatives
- Informal feedback to your programme leader

Quality and standards on each programme are assured via the following mechanisms:

- An initial event to approve the programme for delivery
- An annual report submitted by the External Examiner following a process of external moderation of work submitted for assessment
- The Annual Monitoring process, which is overseen by the University's Education Committee
- Review by the relevant PSRB(s)
- Periodic Subject Review events held every five years
- Other sector compliance and review mechanisms

10. Internal and external reference points

Design and development of this programme has been informed by the following internal and external reference points:

- The Framework for Higher Education Qualifications (FHEQ)
- Institute for Apprenticeships & Technical Education
- The BNU Qualifications and Credit Framework
- The BNU Grading Descriptors
- The University Strategy, Thrive 2028

Mapping of Subject Benchmark Statement and any relevant Apprenticeship Standard to Programme Learning Outcomes

Subject Benchmark Statement / Apprenticeship Standard:	**Knowledge and understanding (K)**				**Analysis and Criticality (C)**					**Application and Practice (P)**				**Transferable skills and other attributes (T)**				
Benchmark / Standard requirement	**K1**	**K2**	**K3**	**K4**	**C1**	**C2**	**C3**	**C4**	**C5**	**P1**	**P2**	**P3**	P4	**T1**	**T2**	**T3**	**T4**	**T5**
Subject knowledge understanding and skills Demonstrate an understanding of the main body of knowledge for their subject and be able to exercise insightful and critical judgement in the use of that knowledge. Be creative and innovative in the application of the principles covered in the curriculum and be able to go beyond what has been taught in classes	X	X			X	X		X	X		X	X	X	X			X	X
Intellectual skills Analyse and apply a wide range of concepts, principles, and practices of the subject in the context of open scenarios, showing refined judgement and adaptability in the selection and use of tools and techniques	X	X	X	X	X		X	X	X	X	X	X		X	X	X	X	X
Computational problem-solving Be able to demonstrate sophisticated judgement, critical	X	X	X		X	X	X	X	X	X	X	X		X	X	X	X	X

thinking, research design and well-developed problem- solving skills with a high degree of autonomy and to create highly effective computational artefacts across complex and unpredictable circumstances																		
Practical skills across the computing lifecycle Demonstrate the ability to undertake problem identification and analysis to appropriately design, develop, test, integrate or deploy a complex computing system and any associated artefacts; deeply understand the relationship between stages and be able to demonstrate related sophisticated problem-solving and evidence-informed evaluative skills	X	X		X	X	X	X	X	X	X	X	X		X	X	X	X	X
Interpersonal and teamworking Skills Demonstrate the ability to work in a highly proactive and accomplished manner, including as a leading member of a team, making excellent use of tools and techniques to proficiently communicate, manage tasks, and plan projects with minimum guidance	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Professional practice covering equality, diversity and	X				X	X	X			X		X			X	X	X	X

inclusion, sustainability and entrepreneurship and enterprise education Identify best-of-kind practices and effect highly principled solutions within a professional, legal, and ethical framework to consistently address a wide breadth of relevant considerations – including data management and use, security, equality, diversity, and inclusion (EDI (Equality, Diversity, and Inclusion) (Equality, Diversity, and Inclusion) (Equality, Diversity, and Inclusion) (Equality, Diversity, and Inclusion)) and sustainability – in the work that they undertake																		

Mapping of Programme Learning Outcomes to Core Modules

Programme Learning Outcomes	**Knowledge and understanding (K)**				**Analysis and Criticality (C)**					**Application and Practice (P)**				**Transferable skills and other attributes (T)**				
Modules	**K1**	**K2**	**K3**	**K4**	**C1**	**C2**	**C3**	**C4**	**C5**	**P1**	**P2**	**P3**	P4	**T1**	**T2**	**T3**	**T4**	**T5**
LEVEL 4																		
COM4008 Programming Concepts	X	X	X	X	X	X	X	X		X	X	X			X	X	X	X

CO4009 Computer Architecture	X	X				X	X		X		X				X		X	
COM4010 Networking	X	X		X	X			X	X	X	X			X		X		
COM4012 Computing Computational Fundamentals		X	X			X	X	X		X		X				X	X	
Opportunity Modules																		
LEVEL 5																		
COM5007 Network Systems	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X
COM5015 Information Security		X			X	X	X		X	X	X	X		X	X	X		
COM5016 Malware and Cyber Security Management	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X		X
COM5017 Digital Forensics Investigation and Penetration	X	X			X	X	X		X	X		X		X		X		

Testing																		
COM5018 Data Essentials			X		X	X		X		X	X	X			X			
Opportunity Modules																		

Knowledge, skills, and behaviours mapping document link - FDSc Cyber Security Technologist KSB Mapping .docx