# Course Specification

| Course Summary Information | | | | |
|---|---|---|---|---|
| 1 | **Course Title** | | BSc (Hons) Cyber Security with Foundation Year | |
| 2 | **BCU Course Code** | **UCAS Code** | US0937F | 1009 |
| 3 | **Awarding Institution** | | Birmingham City University | |
| 4 | **Teaching Institution(s)** (if different from point 3) | | | |
| 5 | **Professional Statutory or Regulatory Body (PSRB) accreditation** (if applicable) | | | |

| 6 | **Course Description** |
|---|---|
| | Want to study a Cyber Security degree? Cyber Security with a Foundation Year ensures you will develop a range of academic and technical skills relevant to cyber security.<br><br>The Foundation Year course option enables you to study for our BSc (Hons) degree over an extended full-time duration of four years by including a Foundation Certificate (year one of four). The Foundation Certificate provides a broad study programme that underpins the follow-on degree. In order to progress to the next year of your degree, it is necessary to achieve a pass in all of the modules of the Foundation Certificate.<br><br>The BSc Cyber Security course is designed to equip you with state-of-the-art technical knowledge, intellectual know-how, management capabilities and practical skills that will enable you to succeed in meeting the cyber security challenges facing modern organisations. In the 21st century, data has become a necessary commodity, which has value in isolation and more so when viewed as a larger data set for trends and habits. Data is key to the functioning of modern business and the protection of this data is key to the ongoing success of the digital economy. As systems, such as IoT, both generate and consume data grow in capability and complexity, the need to protect the data created, stored and transited across public and private networks intensifies. Due to this, the need for suitably qualified cyber security practitioners has never been greater.<br><br>This course will provide you with the knowledge and skills needed by the employers. Our strong links with industry enable us to teach the most demanding and up-to-date topics. You will learn state of the art technical knowledge, intellectual know-how, management capabilities and hands-on practical skills to succeed in meeting the cyber security challenges faced by modern organisations.<br><br>This course is supported by a vibrant research environment within the department of Network and Cyber Security at BCU and by traditionally strong industrial links with CISCO, Oracle, IBM, Microsoft, UK Fast, Linux Professional Institute and BT.<br><br>**What's covered in the course?**<br><br>Secure information technologies form the bedrock of our modern connected mobile society. Our /BSc Cyber Security course will equip you to enter this growing and important industry.<br><br>The course takes a practice-led approach, making use of equipment and tools found in the industry to give you the best preparation for a successful career. Our approach prioritises the |

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| | practical skills sought by industry, backing this up with a thorough understanding of theory. The course delivers the latest in computing, network and security technologies, with the opportunity to gain additional accreditation from Cisco, Juniper, Huawei and the Linux Professional Institute.<br><br>The course delivers a well-rounded curriculum in the security of the communication networks; the security of computer processing and storage equipment and the software that runs on it, both private and public, and both local and cloud based; the security and accuracy of information and information systems; and the forensic analysis of threats and attacks, as well as management-level skills such as project and change management, maximising your career potential.<br><br>Studying computing with us puts you at the heart of an exciting, innovative community. Upon graduation you could progress into a career as a cyber-security engineer, network administrator, and cyber security analyst or network security architect. |

| **7** | **Course Awards** | | |
|---|---|---|---|
| **7a** | **Name of Final Award** | **Level** | **Credits Awarded** |
| | Bachelor of Science with Honours Cyber Security<br>Bachelor of Science with Honours Cyber Security with Professional Placement Year | 6<br>6 | 480<br>600 |
| **7b** | **Exit Awards and Credits Awarded** | | |
| | Foundation Certificate Computing<br>Certificate of Higher Education Cyber Security<br>Diploma of Higher Education Cyber Security<br>Bachelor of Science Cyber Security | 3<br>4<br>5<br>6 | 120<br>240<br>360<br>420 |

| **8** | **Variations from the University Academic Regulations** |
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| | This course has approved variations to the University's Academic Regulations. These can be accessed via the student contract page: https://www.bcu.ac.uk/student-info/student-contract |

| **9** | **Delivery Patterns** | | |
|---|---|---|---|
| **Mode(s) of Study** | **Location** | **Duration of Study** | **Code** |
| Full Time | City Centre | 4 years | US0937F |
| With Professional Placement Year | City Centre | 5 years | US0937FS |

| **10** | **Entry Requirements** |
|---|---|
| | The admission requirements for this course are stated on the course page of the BCU website at https://www.bcu.ac.uk/. |

| 11 | **Course Learning Outcomes** |
|---|---|
| | **Knowledge & Understanding** |
| **1** | Demonstrate knowledge and understanding of key cyber security concepts, mechanisms, services and protocols that are used as basic building blocks for engineering security solutions. |
| **2** | Analyse trends of cyber-attacks, evolving security threats, the mechanisms for monitoring and detecting them, protection controls for mitigating their risks and approaches for holistic cyber defence. |
| **3** | Apply best practices for security management within an enterprise abiding by legal obligations, regulatory requirements, international standards, ethical considerations, good governance, incident response and business continuity plans. |
| **4** | Demonstrate knowledge and understanding of cyber security topics such as network security, digital forensics, AI, information assurance, security testing, threat modelling and secure software development. |
| | **Cognitive & Intellectual Skills** |
| **5** | Systematically analyse security threats to information assets of an organisation, propose suitable countermeasures and justify choices using relevant quantitative and qualitative methods for evaluating associated business risk. |
| **6** | Evaluate the conformance of security management processes of an organisation against international security standards, such as ISO 27000, identifying gaps and recommend mitigations |
| **7** | Apply design principles such as least privileges, fail secure, and defence in depth to engineer security, privacy and resilience. |
| **8** | Analyse and correlate digital forensic information from a variety of sources such as audit logs, hard disks, operating systems, file systems and web browsers in order to detect breaches of security policy, law or regulations. |
| | **Practical & Professional Skills** |
| **9** | Utilise digital forensic tools for collecting, analysing, and processing electronic evidence through application of forensically-sound methodologies. |
| **10** | Demonstrate hands-on experience of security testing tools to systematically identify certain types of vulnerabilities in communication network infrastructures. |
| **11** | Apply appropriate tools to manage threats against software or systems. |
| **12** | Propose a contingency plan, consistent with the organisation's view of associated risks, to ensure business continuity for an organisation upon the detection of an adverse event |
| | **Key Transferable Skills** |
| **13** | Apply skills in research, independent study, career planning, self-management, including time management and prioritisation of tasks when tackling complex problems. |
| **14** | Demonstrate effective communication skills in writing, orally, and in presentations to specialist and non-specialist audiences. Be able to explain, justify and otherwise defend their work and ideas, both in its specific details and within a broader context |
| **15** | Demonstrate team-spirit by cooperating with others, plan and implement tasks at a professional level and contribute to team goals through making sound judgments. |
| **16** | Develop confidence and a resilient approach to undertake a substantial piece of practical work without close supervision. |

| 12 | Course Requirements |
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**12a**

**Level 3:**

***To complete this course, you must successfully complete all the following CORE modules (totalling 120 credits):***

| Module Code | Module Name | Credit Value |
|---|---|---|
| CMP3010 | Fundamental Mathematics | 20 |
| CMP3014 | Fundamentals of Digital Technology | 20 |
| CMP3019 | Cyber Security in Society | 20 |
| CMP3016 | Emerging Technologies | 20 |
| CMP3015 | Independent Practice | 20 |
| CMP3009 | Foundations of Programming | 20 |

**Level 4:**

***To complete this course, you must successfully complete all the following CORE modules (totalling 120 credits):***

| Module Code | Module Name | Credit Value |
|---|---|---|
| CMP4267 | Computer Systems | 20 |
| CMP4298 | Cyber Security Fundamentals | 20 |
| CMP4265 | Applied Operating Systems | 20 |
| CMP4266 | Computer Programming | 20 |
| CMP4268 | Mathematics for Computing | 20 |
| CMP4269 | Network Fundamentals | 20 |

**Level 5:**

***To complete this course, you must successfully complete all the following CORE modules (totalling 120 credits):***

| Module Code | Module Name | Credit Value |
|---|---|---|
| CMP5355 | Software Security | 20 |
| CMP5319 | Systems Security Attacks and Defences | 20 |
| CMP5372 | Applied Cyber Forensics | 20 |
| CMP5356 | Cyber Security Operations | 20 |
| CMP5320 | Networking Technologies | 20 |
| CMP5385 | Applied Cryptography | 20 |

**Professional Placement Year (optional)**

***To qualify for the award of Bachelor of Science with Honours Cyber Security with Foundation Year and Professional Placement Year, you must successfully complete all the modules listed as well as the following Level 5 module:***

| Module Code | Module Name | Credit Value |
|---|---|---|
| PPY5004 | Professional Placement | 120 |

**Level 6:**

***To complete this course, you must successfully complete all the following CORE modules (totalling 120 credits):***

| Module Code | Module Name | Credit Value |
|---|---|---|
| CMP6200 | Individual Honours Project | 40 |
| CMP6176 | Ethical Hacking | 20 |
| CMP6238 | Applied AI for Cyber Security | 20 |
| CMP6189 | Network and Internetwork Forensics | 20 |
| CMP6210 | Cloud Computing | 20 |

## 12b Structure Diagram3

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|---|---|---|---|
| **Year 5 - Level 6** | | | |
| Semester 2 | Individual Honours Project [40 Credits] | Cloud Computing [20 Credits] | Ethical Hacking [20 Credits] |
| Semester 1 | | Applied AI for Cyber Security [20 Credits] | Network and Internetwork Forensics [20 Credits] |
| **Professional Placement Year 4 (Optional) 120 Credits** | | | |
| **Year 3 - Level 5** | | | |
| Semester 2 | Cyber Security Operations [20 Credits] | System Security Attacks and Defences [20 Credits] | Applied Cyber Forensics [20 Credits] |
| Semester 1 | Software Security [20 Credits] | Applied Cryptography [20 Credits] | Networking Technologies [20 Credits] |
| **Year 2 - Level 4** | | | |
| Semester 2 | Cyber Security Fundamentals [20 Credits] | Applied Operating Systems [20 Credits] | Network Fundamentals [20 Credits] |
| Semester 1 | Computer Programming [20 Credits] | Maths for Computing [20 Credits] | Computer Systems [20 Credits] |
| **Year 1 - Level 3** | | | |
| Semester 2 | Emerging Technologies [20 Credits] | Cyber Security in Society [20 Credits] | Foundations of Programming [20 Credits] |
| Semester 1 | Fundamental Mathematics [20 Credits] | Fundamentals of Digital Technology [20 Credits] | Independent Practice [20 Credits] |

## 13 Overall Student Workload and Balance of Assessment

Overall student *workload* consists of class contact hours, independent learning and assessment activity, with each credit taken equating to a total study time of around 10 hours. While actual contact hours may depend on the optional modules selected, the following information gives an indication of how much time students will need to allocate to different activities at each level of the course.

- *Scheduled Learning* includes lectures, practical classes and workshops, contact time specified in timetable
- *Directed Learning* includes placements, work-based learning, external visits, on-line activity, Graduate+, peer learning
- *Private Study* includes preparation for exams

The *balance of assessment* by mode of assessment (e.g. coursework, exam and in-person) depends to some extent on the optional modules chosen by students. The approximate percentage of the course assessed by coursework, exam and in-person is shown below.

### Level 3

**Workload**

**37% time spent in timetabled teaching and learning activity**

| Activity | Number of Hours |
|---|---|
| Scheduled Learning | 456 |
| Directed Learning | 400 |
| Private Study | 344 |
| **Total Hours** | 1200 |

**Balance of Assessment**

| Assessment Mode | Percentage |
|---|---|
| Coursework | 78% |
| Exam | 0 |
| In-Person | 22% |

### Level 4

**Workload**

**24% time spent in timetabled teaching and learning activity**

| Activity | Number of Hours |
|---|---|
| Scheduled Learning | 292 |
| Directed Learning | 469 |
| Private Study | 439 |
| **Total Hours** | 1200 |

**Balance of Assessment**

| Assessment Mode | Percentage |
|---|---|
| Coursework | 80% |

| | |
|---|---|
| Exam | 20% |
| In-Person | 0% |

**Level 5**

**Workload**

**24% time spent in timetabled teaching and learning activity**

| Activity | Number of Hours |
|---|---|
| Scheduled Learning | 288 |
| Directed Learning | 490 |
| Private Study | 422 |
| **Total Hours** | 1200 |

**Balance of Assessment**

| Assessment Mode | Percentage |
|---|---|
| Coursework | 70% |
| Exam | 22% |
| In-Person | 8% |

**Level 6**

**Workload**

**17% time spent in timetabled teaching and learning activity**

| Activity | Number of Hours |
|---|---|
| Scheduled Learning | 202 |
| Directed Learning | 334 |
| Private Study | 664 |
| **Total Hours** | 1200 |

**Balance of Assessment**

| Assessment Mode | Percentage |
|---|---|
| Coursework | 94% |
| Exam | 0% |
| In-Person | 6% |