TECH

CYBER SECURITY TECHNOLOGIST

LEVEL 4

QA Apprenticeships

ACTIVATING IT PROFESSIONALS TO THWART CYBER-CRIME, DECRYPT DATA AND UNTANGLE MALWARE

CONTENTS

Cyber Security Technologist Level 4

OVERVIEW

Our **Cyber Security Level 4 Apprenticeship** combines high-quality classroom training with online learning, coaching and on-the-job experience, to develop real world skills in information security. Our programme gives your people the qualifications, skills and technical grounding needed to thwart cyber-crime, decrypt data and untangle malware.

It develops a blend of technical skills across digital security, information assurance and risk to make your employee secure and productive in a commercial setting. Our programme is designed to build a foundation of skills and knowledge in critical areas.

DURATION: 18-24 months*

JOB ROLES THIS PROGRAMME IS GREAT FOR:

- Cyber Security Specialist
- Security Analyst
- Cyber Operations Manager
- Penetration Tester
- Information Security Officer
- Information Security Auditor

WHO IT'S A GOOD FIT FOR:

- New hires specialising in cyber security that would benefit from a comprehensive development plan
- Existing tech staff looking to specialise in cyber security

QUALIFICATIONS:

- Cyber Security Technologist Level 4

ENTRY REQUIREMENTS:

- A Levels in ICT/Business/Computing
- **Or** a Level 3 apprenticeship in a similar subject
- **Or** an International Baccalaureate at Level 3 in ICT
- **Or** a BTEC Extended Diploma in IT (180 credits)
- Existing staff must not hold an existing qualification at the same or higher level in a similar subject

Speak to your Account Manager for more advice on job role/existing staff suitability for this programme.

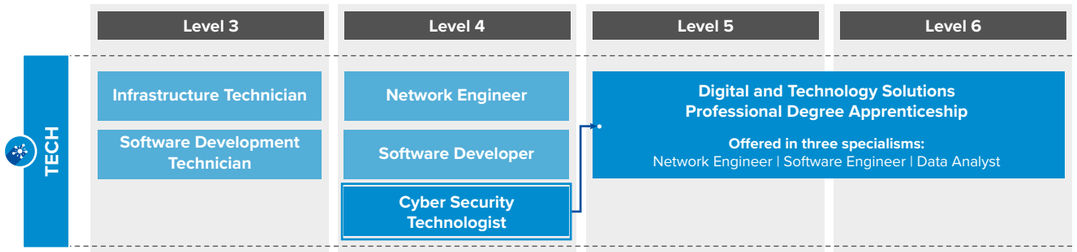
LEARN TO DEFEND SYSTEMS IN THE REAL WORLD:

- Programme includes innovative workshop at QA's cyber labs**
- Simulates a real cyber threat in a secure physical environment

*__NOTE:__ exact timings vary from apprentice to apprentice but most complete the programme in this timeframe.
**Cyber labs in London only.

QA CAREER PATHWAY

Our tech career pathway shows progression opportunities for your employee once they've completed the Level 4 apprenticeship.



CORE SKILLS COVERED:

- Ethical hacking and penetration testing
- Cryptography and encryption
- Open Source Intelligence
- ISO27001: 2013

PROGRAMME STRUCTURE:

The programme is made up of four components, ensuring your employee has a rounded, in-depth understanding of fundamental principles, techniques, technologies and skills essential to their job role.

Together, they ensure they are accurately assessed on their performance; reflecting the quality of their work, and the application of skills, knowledge and behaviours, that map to the apprenticeship standard.

1. Knowledge modules
2. Portfolio
3. Synoptic project
4. End point assessment interview

1. **Knowledge modules** introduce information security theory, through a combination of classroom workshops at a local QA Ofsted 'Outstanding' rated learning centre, and online learning.

Each classroom workshop typically takes place in a 1-week block. At the end of some modules, apprentices will also complete an assessment in the classroom.

Online learning supports the face-to-face learning, before and after the classroom workshops.

It can be completed in the workplace to fit around their job.

2. The **portfolio** showcases real work projects to demonstrate the skills and behaviours they've learnt and practically applied in the workplace whilst on the programme.

The portfolio records the skills, knowledge and behaviours they've gained, to ensure they have the required skills set out in the apprenticeship standard.

It is not evidence that the learning has taken place, but that the apprentice has applied the learning in a holistic and coherent way appropriate to their role in the workplace.

3. The **synoptic project** is a holistic assessment during which the apprentice will apply their skills to solve a business-related problem.

The project takes place in the classroom in a controlled assessment environment.

4. Finally, an external **end point assessment interview** is carried out by BCS – The Chartered Institute for IT, covering the project and contents of the portfolio.

The interview assesses whether the apprentice has successfully met the learning requirements of the programme

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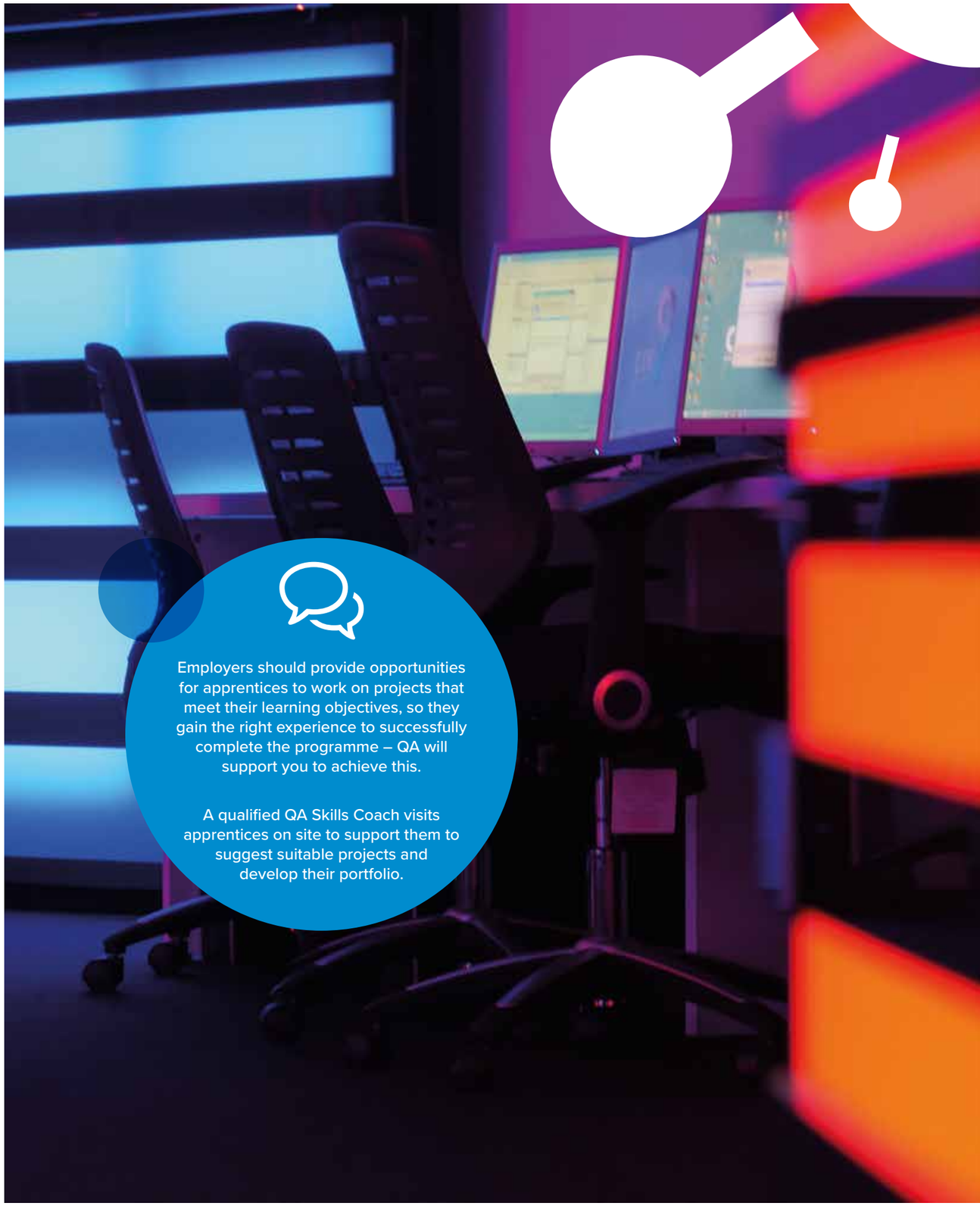

Employers should provide opportunities for apprentices to work on projects that meet their learning objectives, so they gain the right experience to successfully complete the programme – QA will support you to achieve this.

A qualified QA Skills Coach visits apprentices on site to support them to suggest suitable projects and develop their portfolio.

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QA'S APPROACH

TO DELIVERING THE CYBER SECURITY TECHNOLOGIST APPRENTICESHIP STANDARD

As with any investment in learning for your staff, businesses want to know that they're delivering 'good' training and will see a return on investment.

At QA, we've developed a set of design principles to help us focus on this goal when we're developing our apprenticeships.

Here's how we've done this for the Cyber Security Technologist Level 4 apprenticeship standard.

1

MASTERY

We've designed our apprenticeship to develop competence in core skills relevant to the job roles this programme is suitable for.

2

PRACTICAL

Our programme has a hands-on approach to learning.

Firstly, we include practical and group exercises in the classroom, including simulating a cyber threat in our state of the art cyber labs*.

Secondly, our apprenticeship is structured with regular intervals of learning and workplace activity – allowing a short cycle of applied learning.

They can learn, then apply almost straight away in the workplace.

3

BALANCED

Our programme develops a highly relevant, balanced skill set so your employee will be versatile enough to progress their career in a number of different directions.

That way, when your business grows, or the digital industry evolves they can keep up with the pace and adapt to your needs.

4

PRODUCTIVE

Our approach to work-based learning is designed to deliver improved productivity.

Small cycles of new skills and knowledge that your employee can continually apply to their role in context to improve performance.

5

PROGRESSION

Our tech career pathway helps you to retain your super star tech talent, as you can give them progression opportunities and a development plan so they can progress their career with your business.

6

BLENDED

Our programme is designed with a blended approach to learning.

Our online learning platform provides great digital content, backed up with high-value interaction in the classroom with our expert educators.

This model helps to accelerate their learning and means learning doesn't get in the way of their day-to-day role.

*Cyber labs in London only.

SUPPORT FROM QA

20%

SUPPORT WITH EVIDENCING 20% OFF-THE-JOB LEARNING

THE QA APPROACH TO 20% OFF-THE-JOB LEARNING | BLENDED, FLEXIBLE, APPLIED

We have always designed our apprenticeships with our employers in mind. We had already invested in our approach to delivering apprenticeships through blended learning, and this becomes even more valuable with the requirement to evidence 20% off-the-job learning.

Our approach to delivering training through a combination of face-to-face workshops and digital learning facilitates 20% off-the-job learning and provides a number of other benefits too.

OUR APPROACH IS:

BLENDED

We've designed our programmes with the optimum balance of face-to-face and digital learning to suit each occupation and facilitate 20% off-the-job learning.

FLEXIBLE

We will continue to invest in digital learning, which gives our apprentices maximum flexibility to fit learning around the day job.

We understand that this can be fluid and fast changing.

APPLIED

We've made our digital learning highly work-based.

For example, not only will the content be relevant, but the practical exercises, assignments and feedback are designed to enable your employees to immediately apply the new learning to their role.

This approach to our programme design facilitates off-the-job learning so we can support you to confidently evidence the 20%. Speak to your Account Manager who can help with any questions you have.

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WHAT SUPPORT DO LEARNERS RECEIVE?

We provide unrivalled learner support so apprentices have the best possible chance of successfully completing the programme.

1. ONLINE LEARNING PORTAL

Our programme is delivered via a blended approach – giving apprentices time in the classroom alongside online resources to support their development. QA apprentices have access to an online learning portal where they get:

- Pre-reading material before they start a module, so they come to the classroom prepared and can make the most of their face-to-face training.
- Post-reading content if they need to recap anything they have learnt.

2. DEDICATED QA SKILLS COACH

QA Skills Coaches support apprentices throughout the programme. They:

- Provide a single point of contact for any questions or help your apprentice needs.
- Help apprentices to build their portfolio as the programme progresses.
- Meet apprentices and their line managers regularly in the workplace to check their progress and provide support where needed.
- Provide expert pastoral care, including advice around the government's Prevent agenda and safeguarding.

3. BUILT-IN PREPARATION TIME

We have built in preparation time to the programme, so your employee will feel confident and able to pass their assessment and synoptic project.

Apprentices are supported in the classroom by our expert educators to prepare for their synoptic project and interview.

4. INTRODUCING THE COMMITMENT STATEMENT

Your business has a vested interest in tracking your apprentice's progress. QA will support you in maintaining a Commitment Statement tailored to the specific needs and career goals of your apprentice.

The Commitment Statement is a handy way for you to collate and track information on your apprentice's progress. It includes details of all their training – both completed and yet to complete – and will help you plan your apprentice's workload to provide the necessary opportunities to complete practical tasks in line with training goals.

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BLENDED ‘HIGH-TECH’ APPROACH TO LEARNING

WE TEACH APPRENTICES IN THE WAY THEY TELL US THEY WANT TO LEARN

Apprentices need tech-enabled apprenticeship programmes that resonate with their day-to-day life.

We’ve invested in technology and digital content creation to deliver a ‘high tech, high touch’ approach to blended learning for apprentices.

We deliver “mobile-first” education – this means learning can be accessed anytime, anywhere and on any device so apprentices get high-quality learning content on the go.

WHAT DOES THIS MEAN FOR APPRENTICES?

They can:

- Fit their learning around a job, rather than it getting in the way
- Access content whenever they need it
- Prepare ahead of face-to-face training
- Maximise the benefit of classroom training with our expert lecturers
- Digest content in the way they’re used to – online, on mobile

WHAT DOES IT MEAN FOR YOU?

It enables you to:

- Facilitate 20% off-the-job learning
- Track apprentices’ progress and identify areas where additional support may be needed
- Accelerate your employee’s development so they become productive, sooner

HOW DOES IT WORK?

The online learning and resources for apprentices are provided through our virtual learning environment, Canvas.

Canvas provides an accessible user experience, with particular strengths in native video and cross-platform options, including native iOS and Android apps, plus high-quality responsive design for mobile browsers.

(In other words, it looks great on all devices, is super easy to use and is flexible so any user can use it on any device.)

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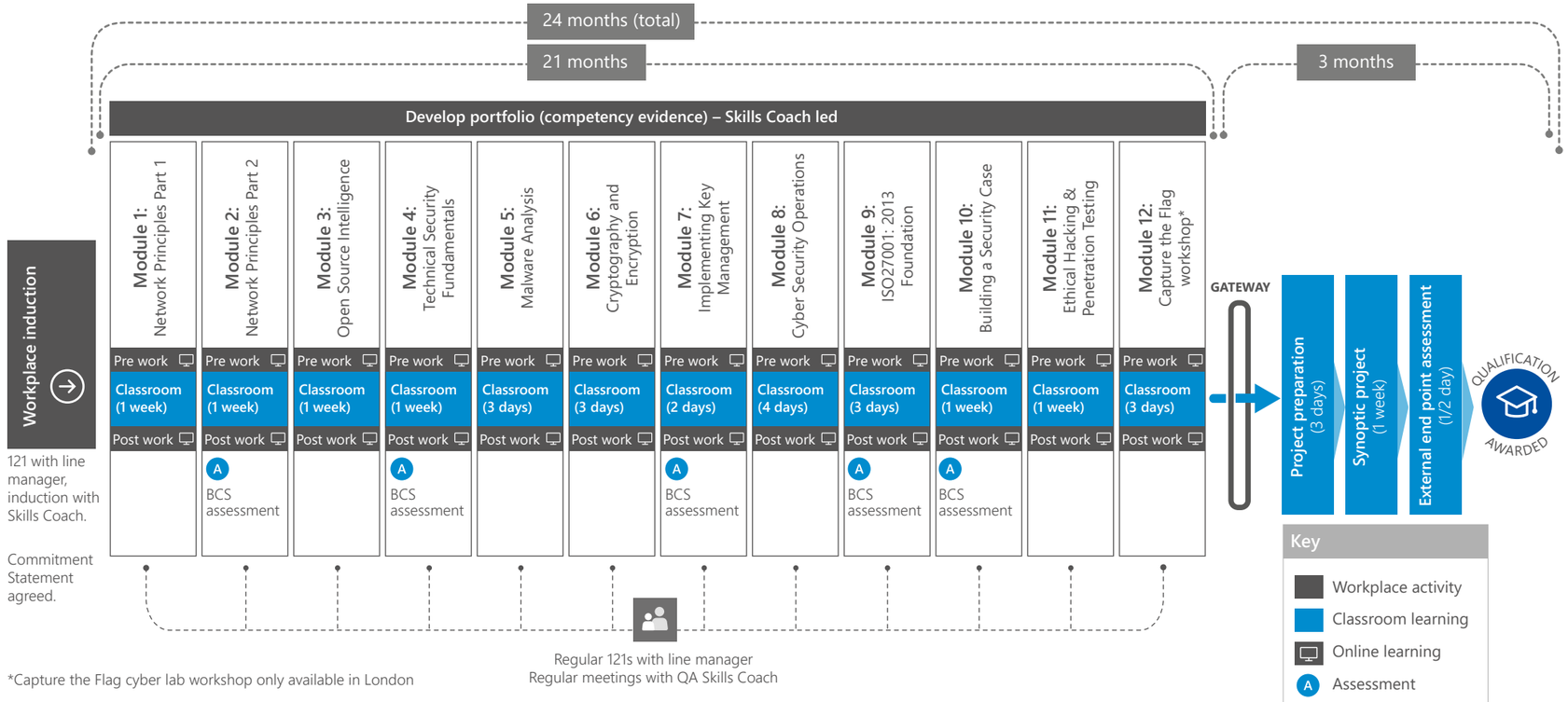
LEARNER JOURNEY

The **learner journey** shows the learning outcomes of the programme, and how it's typically arranged.

As well as the classroom learning, it shows your responsibilities as an employer, the off-the-job learning that takes place outside of the classroom and how our **blended** approach to learning fits in.

Between each module, apprentices spend time in the workplace applying what they've just learnt in the classroom – allowing them to **practically apply the skills and knowledge** they've gained.



(Note: This is a visual representation of how the programme is typically arranged – exact timings/schedule may vary.)

QA HAS OVER
30 YEARS
TECHNOLOGY
TRAINING
EXPERTISE

LEARNING OUTCOMES

KNOWLEDGE MODULES

The knowledge modules in our Cyber Security Technologist Level 4 apprenticeship introduce the skills essential to information security.

Our face-to-face training workshops and online learning develops the core set of skills they must be able to do well to be competent in their role. **This is mastery**.

To ensure all apprentices can do these skills consistently well, we've designed modules with the following learning outcomes:

MODULE 1:

Network Principles Part 1 (1 week)

- Understand the principles of network architecture, network operations, network security, troubleshooting and industry standards.
- Understand TCP/IP, IPv4 and IPv6.
- Understand routing and routing protocols.
- Understand networking as implemented for small, medium and large networks

MODULE 2:

Networking Principles and Practical Networking Part 2 (1 week)

- Understand network design and network performance.
- Be able to design and build a network, and provide evidence that the system meets the design requirement.
- Apply skills in a practical setting.

Apprentices will complete a **BCS assessment in Network and Digital Communications Theory** at the end of this module.

MODULE 3:

Open Source Intelligence (1 week)

- Find key pieces of intelligence on the Internet and World Wide Web.
- Explain the digital footprint that is left when online, and the dangers associated with this.
- Understand how to use social media for investigation, intelligence and geolocation.
- Explore and understand tools and websites available for investigating cyber security intelligence.

MODULE 4:

Technical Security Fundamentals (1 week)

- Understand the IT security threats faced by a modern network and the techniques used to mitigate these threats.
- Respond to IT security incidents and understand IT security policies.
- Understand cryptography and its uses.
- Understand authentication mechanisms.
- Understand the importance of physical security and the compliance and legal requirements of an organisation.

Apprentices will complete a **BCS assessment in Security Technology Building Blocks** at the end of this module.

MODULE 5:

Malware Analysis (3 days)

- Understand the types of malware currently in use on the Internet, how malware is distributed and created, and the strategies used for infecting victims.
- Detect malware and understand how it can be removed.
- Understand threats from rootkits and botnets.
- Understand the process of professional malware creation.

MODULE 6:

Cryptography and Encryption (3 days)

- Develop a strong base of knowledge in cryptography and encryption, including the history and principles of encryption.
- Understand how to use encoding, encryption, hashing and Base64 encoding.
- Understand concepts including binary, hexadecimal, and ASCII.
- Understand different types of encryption and their uses, including symmetric encryption, asymmetric encryption, keys and keygen, password protection, and encryption applications.
- Keep abreast of emerging concepts and investigate different trends, describing what this might mean for a business with supported reasoning.
- Understand weaknesses and attacks.

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MODULE 7:

Implementing Key Management (2 days)

- Understand the fundamentals of key management.
- Understand the different types of keys and their uses.
- Be able to implement a key management system.

Apprentices will take a **BCS assessment in Employment of Cryptography** at the end of this module

MODULE 8:

Cyber Security Operations (4 days)

- Improve operational security capability.
- Leverage the security operations centre (SOC) analyst and specialist training techniques used in vulnerability management and security information management (SIEM) platforms.
- Understand the techniques for assessing and managing cyber risk through effective security incident triage.

MODULE 9:

ISO27001: 2013 Foundation (3 days)

- Understand the requirements and principles of ISO/IEC 27001.
- Develop an awareness of the issues and challenges involved in implementing an information security management system.
- Identify the threats, vulnerabilities and risks associated with assets.
- Plan the ISMS implementation program including consideration of timescales and resources, risk assessment and management, producing a statement of applicability and documentation.

Apprentices will take the **Cyber Security Introduction BCS assessment** at the end of this module.

MODULE 10:

Building a Security Case (1 week)

- Source and analyse a security case and describe what threats, vulnerability or risks are mitigated.
- Develop a simple security case without supervision describing the security objectives, threats, and mitigation or security controls that could include technical, implementation, policy or process.

Apprentices will take a **BCS assessment in Security Case Development and Design Good Practice** at the end of this module.

MODULE 11:

Ethical Hacking and Penetration Testing (1 week)

- Understand hacking concepts, types and phases.
- Understand the use of and be able to use several tools for hacking.
- Understand threats including system hacking, cloud computing threats, and hacking webservers, wireless networks, mobile platforms and web applications.
- Understand the purpose of a penetration test.
- Understand the mind-set of a hacker with a view to secure systems.

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MODULE 12:

Capture the Flag Cyber Workshop (3 days)*

QA's innovative Capture the Flag workshop provides a practical hands-on approach to teaching:

- How to work as a team during complex technical tasking.
- Cyber defence 'tradecraft' problem solving activity.
- System, network and service enumeration.
- How to automate tasks using bash scripts and other types of scripting languages.
- Application enumeration and profiling.
- How data is encoded, decoded, encrypted and decrypted using various algorithms as a means of evading detection.
- How to audit and identify critical signs of compromise within systems.
- How to respond to an incident under time bound pressures.
- How to identify and remove malicious files and services.
- How to test systems and services for vulnerabilities (scanning and fingerprinting).
- How to exploit vulnerabilities in both web and system applications (session hijacking, XSS, exploitation frameworks, SQLi).

The interactive workshop allows your employee to practically apply the skills they have learnt in a safe simulation environment.

The module covers all the technical disciplines required to complete the workshop:

- Kali Linux Defensive skills
- Encoding and decoding strings
- Incident response
- Penetration testing

Once this has been covered, the Capture the Flag workshop will take place. It will be broken up into 4 rounds, each round covering one of the four topics above.

Each team will be given a compromised system where they will be asked to find information relating to how the attacker compromised the system, what the attacker did on the system and the types of information accessed by the attacker.

Each team will perform a vulnerability assessment on the compromised system and attempt to exploit and patch vulnerabilities ranging from weak authentication all the way to remote command execution.

Flags are awarded for successfully completing each task in each round. Each task is worth one flag and the team at the end of the four rounds with the most flags wins.

*Capture the Flag workshop only in London

COMPETENCY STANDARDS

As well as being assessed on their technical knowledge, apprentices are also assessed on their ability to demonstrate the following competencies through their portfolio and interview.

This ensures balanced development – as the competency standards provide a greater emphasis on the importance of both technical and soft skills relevant to their role in the workplace.

Your QA Skills Coach will help apprentices build their portfolio and record these skills throughout the programme.

PROBLEM SOLVING

- Use logical and creative thinking skills.
- Use analytical and problem solving skills.

WORK EFFECTIVELY

- Demonstrate the ability to work independently and take responsibility.
- Demonstrate the ability to use own initiative.
- Maintain a productive, professional and secure working environment.

ORGANISATION

- Take a thorough and organised approach.

COMMUNICATION AND WORKING WITH OTHERS

- Demonstrate the ability to work with a range of internal and external clients.
- Demonstrate the ability to communicate effectively in a variety of situations.

SYNOPTIC PROJECT

The synoptic project is usually undertaken in the last 2-3 months of the apprenticeship, and will be completed before the final end point assessment interview. Preparation time is built into our programme before the project, to help your employee feel confident and able to pass their assessment.

The synoptic project is a practical exercise, providing a hands-on approach to learning that allows learners to experience a project similar to something they would encounter in the workplace.

SYNOPTIC PROJECT AND INTERVIEW PREPARATION

(3 days)

We have designed our programme to give apprentices the best chance of success by building in preparation in the classroom.

Apprentices will use this time to complete a mock synoptic project and have time to prepare for their end point assessment interview.

SYNOPTIC PROJECT

(1 week)

The synoptic project also takes place in the classroom. Apprentices are given a business-relevant project to undertake in a controlled assessment environment.

The project brings together elements of their learning from different parts of the programme and is designed to test a specific set of knowledge, skills and behaviours.

QA HAS OVER
20 LEARNING
CENTRES ACROSS
THE UK

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PROGRAMME ADD-ONS

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SOMETHING MISSING? NO PROBLEM.

Each year QA offers more than **1,500 courses**, delivering half-a-million training days at **over 20 learning centres** throughout the UK.

You can take advantage of industry-leading training and bolt on additional QA courses to **tailor your apprenticeship programme**, and further your employee's specialist knowledge relevant to their role in your business.

Bolt-on courses come at an additional cost, and **can't be funded using your levy/apprenticeship funding**. They are available at a **significant discount off of RRP for apprentices**.

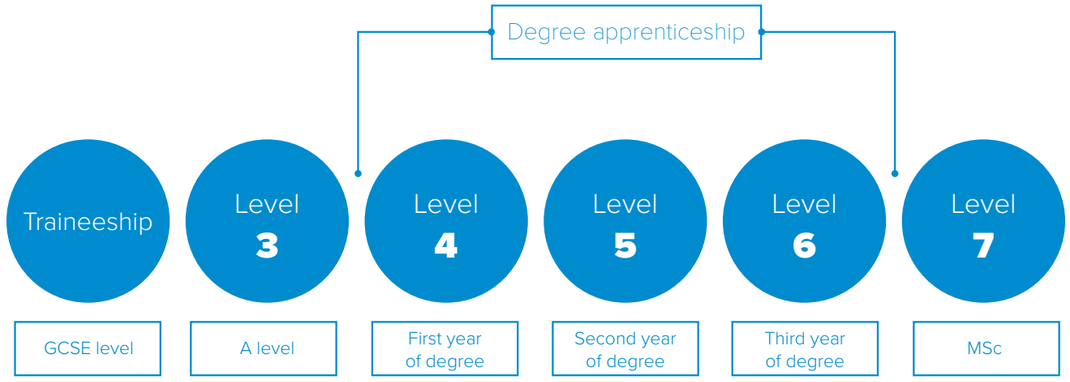
Examples of courses include:

- Cyber Crisis and Response
- Advanced Infrastructure Hacking
- Extreme Security Exploitation
- SOC Analyst Cyber Challenge
- CISSP – Certified Information Systems Security Professional
- SSCP – Systems Security Certified Practitioner

HAVE A LARGE VOLUME OF OVER 30 PEOPLE YOU WANT TO SIGN UP?

QA's apprenticeship solution experts can help you tailor your own technology programme.

Speak to your Account Manager for more information.



A CAREER PATH FROM GCSE TO DEGREE

This is just part of our tech degree track.

QA's apprenticeship programmes are designed with career pathways, from GCSE level right up to attaining a degree. After completing this programme, apprentices have options to progress on to our Degree apprenticeship – providing them with a BSc (Hons) Degree in Digital and Technology Solutions from the University of Roehampton on completion.

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WHAT'S NEXT?

Once they have completed the Cyber Security Technologist Level 4 apprenticeship, your employee will be a highly competent and valuable member of your team.

With the skills and experience, they've gained on the programme — both in training and in your business — they will have a strong technical grounding and become a skilled IT professional, ready to take on higher-level responsibility.

TAKE THE NEXT STEP IN BUILDING THE CYBER TEAM YOUR BUSINESS NEEDS.

GET IN TOUCH TODAY

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