IT Higher Level Apprenticeships

Overview

Overview of Belfast Met IT Higher Level Apprenticeships

Higher Level Apprenticeship offers the opportunity to gain quality training and a recognised higher qualification while in paid employment. Higher Level Apprenticeships allow employers to train staff to the level needed so they have strong technical and good employability skills. The HLA programme is free to private sector companies and there are no course or exam fees for the apprentices.

An apprenticeship can:

- fill higher level skills gap
- attract higher calibre staff
- increase productivity
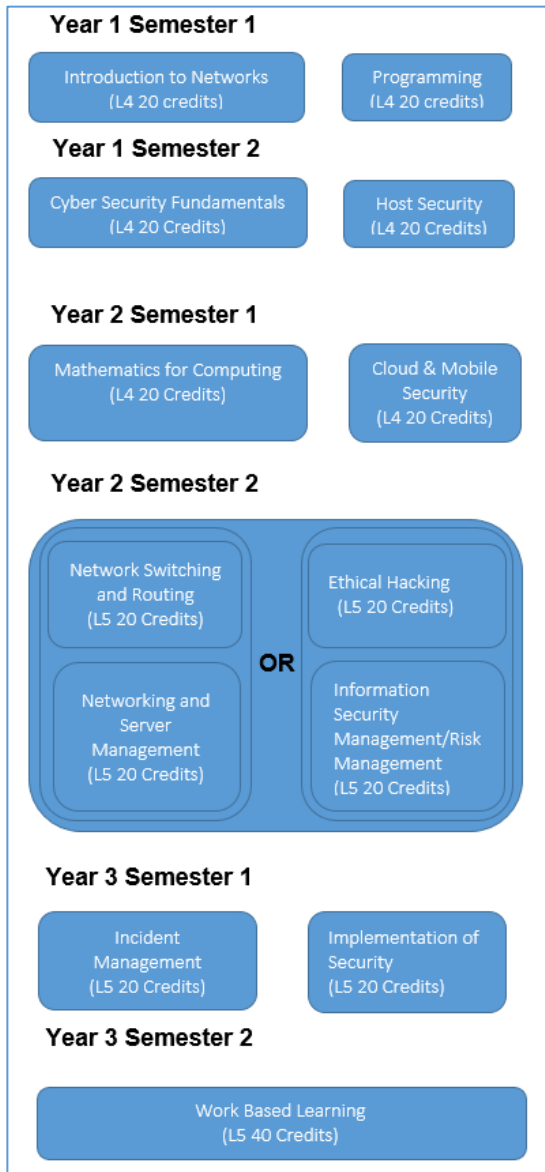- develop existing staff

Belfast Met has been offering HLA IT apprenticeships in Computing Infrastructure and Software Engineering since 2015. Belfast Met are now offering two new IT HLAs for 2018-2019. These are Cyber Security & Networking Infrastructure and Cloud & Application Development. The Open University will validate these new foundation degrees.

The HLA will be two and a half years in duration. Apprentices will spend one day on the programme for 30 weeks and the remaining 4 days in employment each year.

The qualification titles for the current HLAs are as follows.

- Foundation Degree in Cyber Security & Networking Infrastructure
- Foundation Degree in Cloud & Application Development

Foundation Degree in Cyber Security & Networking Infrastructure

Year 1 Semester 1

Introduction to Networks
(L4 20 credits)

Programming
(L4 20 credits)

Year 1 Semester 2

Cyber Security Fundamentals
(L4 20 Credits)

Host Security
(L4 20 Credits)

Year 2 Semester 1

Mathematics for Computing
(L4 20 Credits)

Cloud & Mobile Security
(L4 20 Credits)

Year 2 Semester 2

Network Switching and Routing
(L5 20 Credits)

Ethical Hacking
(L5 20 Credits)

OR

Networking and Server Management
(L5 20 Credits)

Information Security Management/Risk Management
(L5 20 Credits)

Year 3 Semester 1

Incident Management
(L5 20 Credits)

Implementation of Security
(L5 20 Credits)

Year 3 Semester 2

Work Based Learning
(L5 40 Credits)

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Foundation Degree in Cyber Security & Networking Infrastructure – Modules Overview

Introduction to Networks

This module is an introduction to computer networking. Students will become familiar with computer networks; configuring network devices and simulating networks using software. They will also analyse network design and device configuration to resolve problems in a simple computer network and learn to utilise fault-finding techniques to diagnose faults. This module is aligned to Cisco CCNA 1.

Cyber Security Fundamentals

This module provides an introduction to the core Cyber security concepts and skills, covering a wide range of relevant legislation and application to industry. The module will look at how Cyber Security affects an organisation and what measures are used to prevent such incidents from occurring.

Programming

This module will provide students with a basic knowledge of the techniques used in program development. Students will learn the concepts of good program design and subsequent successful implementation. This module will make students aware of the basic building blocks used in developing and testing simple maintainable programs. This module will provide an introduction to programme scripting.

Host Security

This module will provide students with a basic knowledge of computer security. Students will learn about the major challenges to computer security and subsequent ways of protecting systems and data against various types of vulnerabilities, threats and attacks and the legal, privacy and ethical issues in computer security.

Cloud and Mobile Security

The aim of this module is to provide students with a critical understanding of security threats against mobile and cloud computing systems and the security measures designed to protect such systems. The module will explicitly develop students' knowledge and experience in the design and application of mobile and cloud security solutions. The module will also equip students with the knowledge and skills required for further academic study and future employability in the area of computer security.

Mathematics for Computing

This module provides students with a mathematical background to support and enhance material presented in computer science modules. Students will develop proficiency in the use of fundamental mathematical concepts in the areas of discrete structures, algorithms and complexity. Students will also develop an ability to absorb further specific mathematical knowledge as required for given specialised areas. The analytic skills and conceptual thinking required for competence in areas such as programming, database analysis, formal specification, encryption and systems design are developed in the module.

Network Infrastructure 2nd Year Pathway

Network Switching and Routing

In modern day computer networks, many different components are used to create the end system. It is important for students to understand what these components are and how they are used both individually and as a part of a networked computer system. This module expands on student understanding of switching and introduces VLANs and routing protocols along with advanced configuration of switches and configuration of routers. This module follows on from the "Introduction to Networks" module.

Networking and Server Management

This module will provide learners the knowledge and skills required to needed for the configuration, maintenance, and implementation of networked server architectures. In addition, learners will learn how to apply, implement, and manage security controls for a server.

Cyber Security 2nd Year Pathway

Ethical Hacking

This module will provide students with an understanding of both theory and practical techniques in the field of ethical hacking and will underline the importance of adhering to UK and international regulations whilst carrying out ethical hacking.

Information Security Management & Risk Management

This module introduces the core security concepts and skills needed for information security management, covering a wide range of relevant legislation and application to industry. Students will look at how this affects business infrastructure and job roles.

Incident Management

The module will cover incident management from a tactical/regional and national/strategic perspective using the four-stage model: Identification, preparation, mitigation, and recovery.

A range of actual and potential incidents will be covered with primary focus within Cyber-attacks as well as including an understanding of other types of attacks that could be used in association with a cyber-attack such as air accidents, marine accidents, rail accidents, terrorist attacks, and industrial, nuclear and chemical incidents.

Implementation of Cyber Security

This module will teach learners the knowledge and skills necessary to identify risk, to perform risk mitigation activities, provide infrastructure, application, information, and operational security. Learners will learn to apply security controls to maintain confidentiality, integrity, and availability. Learners will identify appropriate technologies and products, troubleshoot security events and incidents, and operate with an awareness of relevant policies, laws, and regulations.

Worked Based Learning

This module will enable students to apply their Cyber Security and Networking Infrastructure knowledge and skills in their working environment where as employees they will have been exposed to a range of the practices and tools used by the Computing Infrastructure sector. As they are based in a relevant and supervised employment this will allow them, the opportunity to apply and develop their skills and knowledge gained throughout the course. While working as a Computing Infrastructure engineer they will also have the opportunity to enhance their personal development and interpersonal skills.

Foundation Degree in Cyber Security & Networking Infrastructure – Vendor Qualifications

CompTIA Security+

CompTIA Security+ is a global certification that validates the baseline skills you need to perform core security functions and pursue an IT security career.

CompTIA Network+

CompTIA Network+ is a performance-based certification that helps you develop a career in IT infrastructure by validating the hands-on skills needed to troubleshoot, configure, and manage both wired and wireless networks.

Cisco CCNA Cyber Ops

The CCNA Cyber Ops certification prepares candidates to begin a career working with associate-level cybersecurity analysts within security operations centres.

BCS CISMP

This certification provides candidates with good knowledge and understanding of the wide range of subject areas that make up information security management. This includes cyber security, risk management, vulnerabilities in social media, legislation, security standards (ISO 27001), business continuity and cloud computing.

LPI Linux Essentials

This course teaches the basic concepts of processes, programs and the components of the Linux operating system. You learn the basic knowledge of computer hardware, gain

an understanding of open source applications in the workplace, and learn to navigate systems on Linux desktop and rudimentary commands to navigate the Linux command line.

Cisco Cyber Essentials

The Cybersecurity Essentials course develops foundational understanding of cybersecurity and how it relates to information and network security. The course introduces students to characteristics of cyber-crime, security principles, technologies, and procedures to defend networks.

Foundation Degree in Cloud & Application Development

Year 1 Semester 1

- Systems Design L4 10 Credits
- Cloud Fundamentals (L4 10 Credits)
- Programming (L4 20 credits)

Year 1 Semester 2

- Database Design and Development (L4 20 Credits)
- Mathematics for Computing (L4 20 Credits)

Year 2 Semester 1

- Application Development (L4 20 Credits)
- Cloud Development (L4 20 Credits)

Year 2 Semester 2

- Data Analytics (L5 20 Credits)
- Software Testing (L5 20 Credits)

OR

- Data Visualisation (L5 20)Credits)
- Mobile Development (L5 20 Credits)

Year 3 Semester 1

- API Development and Management (L5 20 Credits)
- Secure Programming (L5 20 Credits)

Year 3 Semester 2

- Work Based Learning (L5 40 Credits)

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Foundation Degree in Cloud & Application Development – Modules Overview

Cloud Fundamentals

To introduce the student to cloud technologies & computing by looking at technical aspects of networking, virtualization and software development, business processes and financial considerations, project management, as well as security and legal compliance.

System Design

This module aims to provide students with an understanding of how information systems are designed to support business needs. It provides students with the knowledge of different systems development approaches. This module introduces the student to tools and techniques used during requirements analysis and project management. The students can use these to define the to-be system. Emphasis is also placed on team roles and the role of the systems analyst. The module provides a foundation for the work-based modules by introducing students to determining problems and defining requirements.

Programming

This module will provide students with a basic knowledge of the techniques used in program development. Students will learn the concepts of good program design and subsequent successful implementation. This module will make students aware of the basic building blocks used in developing and testing simple maintainable programs.

Database Design and Development

This module provides an integrated practical approach to the development of relational database management systems and the application of system methodologies within a software engineering environment. This module evaluates the role of system

methodologies, with emphasis on the role of design, in delivering usable and maintainable database systems. The practical nature of the subject material is supported through collaborative work using Rapid Applications Development (RAD) on several small systems development problems and reinforces technical skills taught elsewhere on the course.

Mathematics for computing

This module provides students with a mathematical background to support and enhance material presented in computer science modules. Students will develop proficiency in the use of fundamental mathematical concepts in the areas of discrete structures, algorithms and complexity. Students will also develop an ability to absorb further specific mathematical knowledge as required for given specialized areas. The analytic skills and conceptual thinking required for competence in areas such as programming, database analysis, formal specification, encryption and systems design are developed in the module.

Application Development

This module will equip students with essential knowledge and skills to become efficient application developers. The module will consolidate and integrate programming concepts and techniques, which students have learned earlier in the degree for the purpose of application development for the real world. The module will also extend students' knowledge and skills for them to be able to tackle issues pertinent to realistic application development projects.

Cloud Development

Throughout the course as a whole students gain experience in a variety of 'traditional' programming languages in procedural, functional and object-oriented flavours. This

module addresses the design and use of tools and languages for cloud-based computing applications and the rationale for using these paradigms.

Data Analytics 2nd Year Pathway

Data Analytics

The aim of this module is to allow students to understand the foundational skills in data analytics, including preparing and working with data; abstracting and modelling an analytic question; and using tools from statistics, learning and mining to address these questions. Students will study techniques for how to go from raw data to a deeper understanding of the patterns and structures within the data, to support making predictions and decision-making.

Data Visualisation

The rationale of this module is to provide students with the key principles and techniques of data visualization. By completing this, module students will gain knowledge and skills on developing methods and techniques of data visualisation to improve comprehension, communication, and decision making in big data applications.

This module is linked with the Data Analytics module. These modules must both be taken in order to satisfy the Data Analytics pathway. The Data Analytics module must be completed before this module, as it is important that student understand how to extract, mine and analyze data before they learn how to visually represent large datasets.

Software Engineering 2nd Year Pathway

Software Testing

This module will provide learners with the knowledge, understanding and skills necessary for a systematic approach to testing including knowledge of software testing industrial standards (IEEE).

Mobile Development

The rationale for this module is to give students knowledge and skills of mobile device development across several platforms. Conceptual elements relating to the design and planning of a mobile application will be covered, alongside the programming language concepts needed to implement an end-to-end solution. Full training in mobile device programming will be given, notably in relation to interactive functionality, with the aim of producing a fully functional application by module end.

API Development and Management

Among the topics included in this module are: identifying what an API is and the need for APIs; types of APIs; application design and development utilising relevant APIs in a suitable development environment; testing of the application; and a critical review of the APIs used. On successful completion of this module, students will be able to identify and select relevant APIs to use within an application of their own choice or from a given scenario, in addition to testing and documenting the review process against the initial design requirement. As a result, students will develop skills such as communication literacy, critical thinking, analysis, reasoning and interpretation, which are crucial for gaining employment and developing academic competence.

Secure Programming

There are software defects, which can be easily avoided that are a primary cause of commonly exploited software vulnerabilities. Most vulnerabilities arise from a relatively small number of common programming errors. By identifying insecure coding practices and developing secure alternatives, software developers can take practical steps to reduce or eliminate vulnerabilities before deployment. Employing secure programming techniques before the software is deployed can lead to significant cost savings.

Worked Based Learning

This module will enable students to apply their application development knowledge and skills in their working environment where as employees they will have been exposed to a range of the practices and tools used by the software & application development sector. As they are based in a relevant and supervised employment this will allow them, the opportunity to apply and develop their skills and knowledge gained throughout the course. While working as an application developer they will also have the opportunity to enhance their personal development and interpersonal skills.

Foundation Degree in Cloud & Application Development – Vendor Qualifications

AWS Cloud Practitioner

The AWS Certified Cloud Practitioner examination is intended for individuals who have the knowledge and skills necessary to effectively demonstrate an overall understanding of the AWS Cloud. The AWS Certified Cloud Practitioner (CLF-C01) examination is for anyone looking to learn and understand core offerings of the Amazon AWS Cloud.

MTA Programming in Python

This certification provides students with the knowledge to recognize and write syntactically correct Python code, recognize data types supported by Python, and be able to recognize and write Python code that will logically solve a given problem.

MTA Introduction to Programming Using JavaScript

This certification will provide students with the knowledge to recognize and write syntactically correct JavaScript code, use data types supported by JavaScript, and be able to recognize and write JavaScript code that will logically solve a given problem.

CompTIA Cloud Essentials

The **CompTIA Cloud Essentials course** is a vendor-neutral technical qualification. The certification provides students with the knowledge and understanding of **Cloud Computing** concepts. Students will learn how to move business components to the Cloud

and understand what cloud computing means from a business and technical point of view.

Analyzing and Visualizing Data with Microsoft Power BI

This Power BI certification (Exam 70-778) will guide students through Power BI end-to-end, starting from how to connect to and import data, author reports using Power BI Desktop, publish those reports to the Power BI service, create dashboards, and share to business users so that they can consume the dashboards through the web and their mobile devices.

Android Certified Application Developer AND-801

This course guides students through the fundamental skills necessary to deploy Android Apps on mobile devices such as phones and tablets. Students will design and build a variety of Android Apps throughout the course.

Certified Tester Foundation Level in Software Testing

This certification provides students with the knowledge to evaluate static testing, utilise test design techniques, incorporate test management practices within an organisation, and build testing methods to correctly design functional and maintainable products.

Entry Requirements

Applicants must:

Hold 160 UCAS points or 64 tariff points, GCSEs at C or above in English and Mathematics, or equivalent qualifications, such as Level 2 Essential Skills in Numeracy and Literacy.

Specific requirements of the programme:

- Each apprentice either is a new employee or is taking on a new job role, with an existing employer, commensurate to the apprenticeship being pursued.
- An appropriate Apprenticeship Agreement is in place with the employer.

Contact Details

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