Your Path to
Cyber Security

PEARSON BTEC LEVEL 5

Higher National Diploma International in Computing

Cyber Security

Awarded by **P** Pearson

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Dream & Achieve
with DeMont

DeMont Institute of Management and Technology
is among the first Technical and Vocational Education and Training (TVET) providers in the UAE. DeMont offers NCFE, CMI, and Pearson programs that are accredited by Knowledge and Human Development Authority (KHDA). We have mastered the art, science, and practice of providing quality UK education with optimum result-centric teaching models that include pedagogical and blended forms of learning. Imparting quality education, offering accredited certifications, and delivering lessons that will alter our students' experience for the better is at the core of our institution's value. DeMont aspires to pave a promising career pathway for all those who walk through the doors of the institution with the desire to learn and grow.

Learning is a
never-ending road of
**discovery, challenge,
inspiration, and wonder.**

Pearson

About Pearson

Pearson Education is a British-owned educational publishing and appraisal service for educational institutions and corporations. They offer academic and vocational qualifications that are globally recognized and benchmarked, with educational excellence rooted in names like Edexcel, BTEC, EDI, and LCCI. It integrates world-class educational content and evaluation, driven by services and technology, to allow more efficient teaching and customized learning.

Introduction to BTEC

BTEC is one of the world's most successful brands, that engages students in practical, interpersonal and thinking skills. BTECs are work-related qualifications for students taking their first steps into employment, or for those already in employment and seeking career development opportunities. BTECs provide progression into the workplace either directly or via study at university and are also designed to meet employer's needs. Therefore, Pearson BTEC Higher National qualifications are widely recognised by industry and higher education as the principal vocational qualification at Levels 4 and 5.

There is now a greater emphasis on employer engagement and work readiness. The new Pearson BTEC Higher National qualifications in Computing are designed to reflect the increasing need for high quality professional and technical education pathways at Levels 4 and 5, thereby providing students with a clear line of sight to employment and to progression to a degree at Level 6.

Why choose Pearson BTEC Higher Nationals?

Pearson BTEC Higher Nationals are designed to help students secure the knowledge and skills needed to succeed in the workplace. They represent the latest in professional standards and provide opportunities for students to develop behaviours for work, for example by undertaking a group project, or responding to a client brief.

A student may even achieve exemption from professional or vendor qualifications, or student membership of selected professional bodies, to help them on their journey to professional competence.

At the same time, the BTEC Higher Nationals are intended to keep doors open for future study should a student wish to progress further in their education. They do this by allowing space for the development of higher education study skills, such as the ability to research. Clear alignment of level of demand with the Framework for Higher Education qualification descriptors at level 4 and 5 means that students wishing to progress to level 6 study should feel better prepared. The Pearson BTEC Higher Nationals address these various requirements by providing:

1 A range of core, and specialist units, each with a clear purpose, so there is something to suit each student's choice ofprogramme and future progression plans.

2 Fully revised content that is closely aligned with the needs of employers, professional bodies, vendors and higher education for a skilled future workforce.

3 Learning Outcomes mapped against Professional Body standards and vendor accreditation requirements, where appropriate.

4 An approach to demand at level 4 and 5 which is aligned with the Framework for Higher Education Qualifications (FHEQ).

5 Assessments and projects chosen to help students progress to the next level.

6 Support for student and tutors including Schemes of Work and Sample Assessment Briefs.

BTEC HND International in Computing (Cyber Security)

Who is this qualification for

The Higher National Diploma International (HND) in Computing with a specialization in Cyber Security is a comprehensive educational program designed to equip students with the knowledge, skills, and practical experience required to excel in the field of cybersecurity. This program focuses on preparing students for careers in identifying and addressing cybersecurity threats, protecting sensitive information, and ensuring the integrity of digital systems.

Key Features

Pearson BTEC Higher National Diploma International in Computing (Cyber Security) offer:

▶ A balanced blend of core subjects and elective courses that are directly relevant to the field of cyber security. This ensures that students gain a holistic understanding of various aspects within the discipline.

▶ Exposure to rigorous theoretical training that covers the fundamental principles of cyber security. This theoretical foundation helps students comprehend the underlying concepts that drive various cyber security practices.

▶ Students with hands-on learning experience where they can work with real-world tools and technologies used in cyber security. This hands-on approach enhances their problem-solving abilities and ensures they are well-prepared for real-world challenges.

▶ A curriculum designed in consultation with industry experts, ensuring that graduates possess the skills that are highly sought after by employers in the rapidly evolving cyber security landscape.

▶ Students with a deep understanding of cyber security concepts, practical skills, and the ability to adapt to emerging threats, making them highly desirable candidates for various job roles within the industry.

Qualification frameworks

Pearson BTEC Higher National qualifications are recognised higher education qualifications in the UK. They are in line with the Framework for Higher Education Qualifications (FHEQ) in England, Wales and Northern Ireland, and Quality Assurance Agency (QAA) Subject Benchmark Statements. These qualifications are part of the UK Regulated Qualifications Framework (RQF).

Programme Purpose

The Higher National Diploma (HND) International in Computing with a specialization in Cyber Security program is designed to prepare students to excel as cybersecurity professionals. By combining theoretical knowledge, practical skills, industry alignment, and ethical considerations, the program equips graduates to contribute effectively to the security and integrity of digital systems in a dynamic and interconnected world.

Units & Credit Structure

The Pearson BTEC Higher National Diploma (HND) is a Level 4 and Level 5 qualification made up of 240 credits.

Unit Name	Credits
Programming	15
Networking	15
Professional Practice	15
Database Design & Development	15
Security	15
Planning a Computing Project (Pearson-set)	15
Cyber Security	15
Website Design & Development	15
Computing Research Project (Pearson-set)	30
Business Process Support	15
Applied Cryptography in the Cloud	15
Forensics	15
Information Security Management	15
Operating Systems	15
Cloud Computing	15
Total Credits	240

What could these qualifications lead to?

The Level 4 Higher National Certificate provides a solid foundation in computing, which students can build on if they decide to continue their studies. The Level 5 Higher National Diploma allows students to specialise by committing to specific career paths and progression routes to degree-level study. Once students have achieved the Level 5 Higher National Diploma, they can develop their career in the respective sector by:

> Entering employment

> Continuing existing employment

> Linking with the appropriate professional body

> Committing to continuing professional development

Progression to University

The Level 5 Higher National Diploma is recognised by higher education providers as meeting admission requirements to many computing-related courses, for example:

> BSc (Hons) Computing

> BSc (Hons) in Applied Computing

> BSc (Hons) in Business and Computing.

Programming

This unit introduces students to the core concepts of programming with an introduction to algorithms and the characteristics of programming paradigms. Among the topics included in this unit are: introduction to algorithms, procedural, object-orientated & event-driven programming, security considerations, the integrated development environment and the debugging process.

LEARNING OUTCOMES

By the end of this unit students will be able to:

01 Define basic algorithms to carry out an operation and outline the process of programming an application.

02 Explain the characteristics of procedural, object-orientated and event-driven programming.

03 Implement basic algorithms in code using an IDE.

04 Determine the debugging process and explain the importance of a coding standard.

Networking

The aim of this unit is to provide students with wider background knowledge of computer networking essentials, how they operate, protocols, standards, security considerations and the prototypes associated with a range of networking technologies.

LEARNING OUTCOMES

By the end of this unit students will be able to:

01 Examine networking principles & their protocols.

02 Explain networking devices & operations.

03 Design efficient networked systems.

04 Implement and diagnose networked systems.

Wiring
the world for
progress.

Professional Practice

This unit provides a foundation for good practice in a variety of contexts. The ability to communicate effectively using different tools and mediums will ensure that practical, research, design, reporting and presentation tasks are undertaken professionally and in accordance with various communication conventions. In everyday life the ability to apply critical reasoning and solve problems are necessary skills to enable task resolution and facilitate effective decision-making. Working with others in a group environment academically or within the workplace is an integral part of everyday life.

LEARNING OUTCOMES

By the end of this unit students will be able to:

01 Demonstrate a range of interpersonal and transferable communication skills to a target audience.

02 Apply critical reasoning and thinking to a range of problem-solving scenarios.

03 Discuss the importance and dynamics of working within a team and the impact of team working in different environments.

04 Examine the need for Continuing Professional Development (CPD) and its role within the workplace and for higher level learning.

Database Design & Development

The aim of this unit is to give students opportunities to develop an understanding of the concepts and issues relating to database design and development, as well as to provide the practical skills to translate that understanding into the design and creation of complex databases.

LEARNING OUTCOMES

By the end of this unit students will be able to:

01 Use an appropriate design tool to design a relational database system for a substantial problem.

02 Develop a fully functional relational database system, based on an existing system design.

03 Test the system against user and system requirements.

04 Produce technical & user documentation.

Professional practice in database design and development is the foundation upon which organizations build their data-driven futures

In the world of
cyber threats,
knowledge is your
most powerful
defense

Security

The aim of this unit is to give students knowledge of security, the associated risks and how it has an impact on business continuity. Students will examine security measures involving access authorisation and regulation of use. They will implement contingency plans and devise security policies and procedures. The unit also introduces students to detection of threats and vulnerabilities in physical and IT security, and how to manage risks relating to organisational security.

LEARNING OUTCOMES

By the end of this unit students will be able to:

01   Assess risks to IT security.

02   Describe IT security solutions.

03   Review mechanisms to control organisational IT security.

04   Manage organisational security.

Planning a Computing Project

This unit aims to allow students to demonstrate the research skills required for developing a deeper understanding of a subject and the ability to use evidence to inform decisions. Students will undertake independent research, and investigation of a theme set by Pearson. They will investigate and research an industry sector as outlined in the centre-set project brief. Additionally, they will use the outcomes of their research to plan a computer-based project and to support recommendations for how the identified business could use the tools and technologies identified as part of their research.

LEARNING OUTCOMES

By the end of this unit students will be able to:

01   Conduct small-scale research, information gathering and data collection to generate knowledge on an identified subject.

02   Explore the features and business requirements of organisations in an identified sector.

03   Produce project plans based on research of the chosen theme for an identified organization.

04   Present your project recommendations and justifications of decisions made, based on research of the identified theme and sector.

Operating Systems

This unit introduces students to different operating systems such as DOS, Windows, UNIX and Linux. The topics covered are the tasks of operating systems such as controlling and allocating memory, prioritising system requests, controlling input and output devices, facilitating data networking and managing files, including security and protection. Among the topics included in this unit are: the history and evolution of operating systems; the definition of an operating system; why operating systems are needed; how operating systems started and developed; operating systems management roles; management of memory, processes, processors, devices and files; security and protection: user security, device, application and process protection; inter-process communication; comparison of operating systems; distributed and networked systems; concurrent systems; multi-user systems; graphical interface systems; and practical application of operating systems: user interface commands of major operating systems; installations and extensions of operating systems.

LEARNING OUTCOMES

By the end of this unit students will be able to:

01 Investigate different operating systems, their functions and user interfaces.

02 Explore the processes managed by an operating system.

03 Demonstrate the use of DOS, Windows, UNIX and Linux.

04 Analyse appropriate techniques and technologies used in distributed and concurrent systems.

Cloud Computing

This unit is designed to develop an understanding of the fundamental concept of Cloud Computing, cloud segments, cloud deployment models, and the need for Cloud Computing. Students will gain appreciation of issues associated with managing cloud service architecture and to develop a critical awareness of Cloud Computing based projects. Topics included in the unit are the paradigms of networking, fundamentals of cloud computing, cloud computing architecture, deployment models, service models, security, technological drivers and cloud service providers.

LEARNING OUTCOMES

By the end of this unit students will be able to:

01 Demonstrate an understanding of the fundamentals of Cloud Computing and its architectures.

02 Evaluate the deployment models, service models and technological drivers of Cloud Computing and validate their use.

03 Develop Cloud Computing solutions using service provider's frameworks and open source tools.

04 Analyse the technical challenges for cloud applications and assess their risks.

Website Design & Development

This unit introduces students to the underpinning services required to host, manage and access a secure website before introducing and exploring the methods used by designers and developers to blend back-end technologies (server-side) with front-end technologies (client-side). To help ensure new designers are able to design and deliver a site that offers an outstanding User Experience (UX) supported by an innovative User Interface (UI) this unit also discusses the reasons, requirements, relationships, capabilities and features of the systems they will be using and gives them an opportunity to explore various tools, techniques and technologies with 'good design' principles to plan, design and review a multipage website.

LEARNING OUTCOMES

By the end of this unit students will be able to:

01 Explain server technologies and management services associated with hosting and managing websites.

02 Categorise website technologies, tools and software used to develop websites.

03 Utilise website technologies, tools, and techniques with good design principles to create a multipage website.

Create and use a Test Plan to review the performance and design of a multipage website.

Computing Research Project

The aim of this unit is to give students the opportunity to engage in sustained research in a specific field of study. Students will be able to demonstrate the capacity and ability to identify a research theme, to develop research aims, objectives and outcomes, and to present the outcomes of such research in both written and verbal formats. Students are encouraged to reflect on their engagement in the research process, during which recommendations for personal development are key learning points.

LEARNING OUTCOMES

By the end of this unit students will be able to:

01 Examine appropriate research methodologies and approaches as part of the research process.

02 Conduct and analyse research relevant to a computing research project.

03 Communicate the outcomes of a research project to identified stakeholders.

04 Reflect on the application of research methodologies and concepts.

In the world of computing, research is the compass, and web design and development are the sails. Together, they navigate us to new horizons

Business Process Support

This unit introduces students to a range of tools, techniques and technologies used for acquiring data and processing it into meaningful information that can be used to support business functions and processes. Students will examine how data and information support business processes, and the mechanisms to source and utilise data and turn it into usable, and valuable, information output. Students will explore real-world business problems, the emergence of data science and how the application of data science can be used to support business processes. Finally, students will demonstrate the practical application of data science techniques to support real-world business problems.

LEARNING OUTCOMES

By the end of this unit students will be able to:

01 Discuss the use of data and information to support business processes and the value they have for an identified organization.

02 Discuss the implications of the use of data and information to support business processes in a real-world scenario.

03 Explore the tools and technologies associated with data science and how it supports business processes.

04 Demonstrate the use of data science techniques to make recommendations to support real-world business problems.

Applied Cryptography in the Cloud

This unit introduces students to the applied principles of cryptography and looks at its practical applications and methods, many of which are fundamental to secure data in the cloud. Students are expected to analyse fundamental symmetric, asymmetric and hashing encryption methods and investigate examples of these in practice. Students are expected to demonstrate the use of cryptography and cryptanalysis tools, methods, and their applications. Students are also expected to appraise the inner workings of cryptographic protocols and principles, including transport layer security (TLS) and blockchain, and evaluate how they can be used by organisations to enhance security. when considering moving to a cloud environment.

LEARNING OUTCOMES

By the end of this unit students will be able to:

O1 Analyse encryption ciphers and algorithms as methods to secure data in a cloud environment

O2 Discuss security risks and issues related to public key encryption in practice

O3 Demonstrate the use of cryptographic and cryptoanalysis tools for improving security in a virtual private network

O4 Evaluate advanced encryption protocols and their application for an organisation considering a move to the cloud.

Information Security Management

This unit introduces students to the basic principles of an ISMS and how businesses use them to manage the ongoing protection of sensitive information they hold effectively. There are many reasons for establishing an ISMS for an organisation, but one of the main goals is to enable the organisation to manage information security as a single entity, which can be monitored and continually improved on.

LEARNING OUTCOMES

By the end of this unit students will be able to:

01 Explore the basic principles of information security management

02 Critically assess how an organisation can implement and maintain an Information Security Management System (ISMS)

03 Appraise an ISMS and describe any weaknesses it may contain

04 Examine the strengths and weaknesses of implementing ISMS standards.

Cyber Security

This unit has been designed to develop students' knowledge and understanding in relation to cyber threats and vulnerabilities, cyber defence techniques and incident response. Students will explore fundamental principles as well as leading-edge concepts, terminologies, models, and hardening methods. Students will assess the types of malicious activity and potential targets, and the role everyone has for maintaining cyber resilience.

LEARNING OUTCOMES

By the end of this unit students will be able to:

01 Explore the nature of cybercrime and cyber threat actors

02 Investigate cyber security threats and hazards

03 Examine the effectiveness of information assurance concepts applied to ICT infrastructure

04 Investigate incident response methods to cyber security threats.

UNIT DETAILS

Forensics

This unit introduces students to digital forensics involving the use of specialized techniques to investigate the recovery, authentication and analysis of data on electronic data storage devices, as well as network security breaches and cyber attacks, using different tools and techniques.

LEARNING OUTCOMES

By the end of this unit students will be able to:

01 Examine the processes and procedures for carrying out digital forensic investigation

02 Discuss the legal and professional guidelines and procedures for carrying out digital forensic investigation

03 Use a tool or tools to conduct digital forensic investigation on devices or networks or cyber attacks

04 Develop a Test Plan and make some recommendations for use in digital forensic investigation.

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