BTEC

Pearson Higher Nationals in Computing

Specification

First Teaching from September 2017
First Certification from 2018
Issue 3

Level 4 BTEC Higher National Certificate

Level 5 BTEC Higher National Diploma

Pearson

Edexcel, BTEC and LCCI qualifications

Edexcel, BTEC and LCCI qualifications are awarded by Pearson, the UK's largest awarding body offering academic and vocational qualifications that are globally recognised and benchmarked. For further information, please visit our qualifications website at qualifications.pearson.com. Alternatively, you can get in touch with us using the details on our contact us page at qualifications.pearson.com/contactus

About Pearson

Pearson is the world's leading learning company, with 35,000 employees in more than 70 countries working to help people of all ages to make measurable progress in their lives through learning. We put the learner at the centre of everything we do, because wherever learning flourishes, so do people. Find out more about how we can help you and your learners at qualifications.pearson.com

References to third-party material made in this specification are made in good faith. Pearson does not endorse, approve or accept responsibility for the content of materials, which may be subject to change, or any opinions expressed therein. (Material may include textbooks, journals, magazines and other publications and websites.)

All information in this specification is correct at time of publication.

ISBN 978 1 446 94677 0

Contents

1. Introduction

BTEC is one of the world's most successful and best-loved applied learning brands, engaging students in practical, interpersonal and thinking skills for more than thirty years.

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.

When redeveloping the Pearson BTEC Higher National qualifications in Computing, we collaborated with a wide range of students, employers, higher education providers, colleges and subject experts to ensure that the new qualifications meet their needs and expectations. We also worked closely with the relevant professional bodies, to ensure alignment with recognised professional standards.

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 this 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.

1.1 The Student Voice

Students are at the heart of what we do. That is why, from the outset, we consulted with students in the development of these qualifications. We involved them in writing groups, sought their feedback, and added their voices and views to those of other stakeholders.

The result, we believe, are qualifications that will meet the needs and expectations of students worldwide.

1.2 Why choose Pearson BTEC Higher Nationals?

Pearson BTEC Higher Nationals are designed to help students secure the knowledge skills and behaviours 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 after their level 5 study. 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:

- A range of core, optional and specialist units, each with a clear purpose, so there is something to suit each student's choice of programme and future progression plans.
- Fully revised content that is closely aligned with the needs of employers, professional bodies, vendors and higher education for a skilled future workforce.
- Learning Outcomes mapped against Professional Body standards and vendor accreditation requirements, where appropriate.
- Assessments and projects chosen to help students progress to the next stage (this means some are set by the centre to meet local needs, while others are set by Pearson).
- An approach to demand at level 4 and 5 which is aligned with the Framework for Higher Education Qualifications (FHEQ).
- Support for student and tutors including Schemes of Work and Sample Assessment Materials (SAMs).

1.3 HN Global

Pearson BTEC Higher Nationals are supported by a specially designed range of digital resources, to ensure that tutors and students have the best possible experience during their course. These are available from the HN Global website http://www.highernationals.com/.

With HN Global, tutors can access programme specifications which contain useful information on programme planning and quality assurance processes. Tutors can also view schemes of work and sample assessment materials, helping them create meaningful courses and assessments. HN Global also allows tutors to create and annotate reading lists for their students and also keep up-to-date on the latest news regarding HN programmes.

1.4 Qualification titles

Pearson BTEC Level 4 Higher National Certificate in Computing

Pearson BTEC Level 5 Higher National Diploma in Computing

Specialist pathways are included within brackets in the qualification title:

- Pearson BTEC Level 5 Higher National Diploma in Computing
- Pearson BTEC Level 5 Higher National Diploma in Computing (Network Engineering)
- Pearson BTEC Level 5 Higher National Diploma in Computing (Software Engineering)
- Pearson BTEC Level 5 Higher National Diploma in Computing (Data Analytics)
- Pearson BTEC Level 5 Higher National Diploma in Computing (Security)
- Pearson BTEC Level 5 Higher National Diploma in Computing (Intelligent Systems)
- Pearson BTEC Level 5 Higher National Diploma in Computing (Applications Development)

1.5 Qualification codes

Ofqual Regulated Qualifications Framework (RQF) Qualification numbers:
Pearson BTEC Level 4 Higher National Certificate in Computing: 603/0472/8
Pearson BTEC Level 5 Higher National Diploma in Computing: 603/0471/6

1.6 Awarding institution

Pearson Education Ltd.

1.7 Key features

Pearson BTEC Higher National qualifications in Computing offer:

- A stimulating and challenging programme of study that will be both engaging and memorable for students.
- The essential subject knowledge that students need to progress successfully into further study or the world of work.
- A simplified structure: students undertake a substantial core of learning in the BTEC Higher National Certificate and can build on this in the BTEC Higher National Diploma, with specialist and optional units linked to their area of study.
- Six specialist pathways in the BTEC Level 5 Higher National Diploma, so there is something to suit each student's preference of study and future progression plans.
- Refreshed content that is closely aligned with Professional Body, vendor, employer and higher education needs.
- Assessments that consider cognitive skills (what students know) along with affective and applied skills (how they behave and what they can do, respectively)
- Unit-specific grading and Pearson-set assignments.
- A varied approach to assessment that supports progression to Level 6 and also allows centres to offer assessment relevant to the local economy, thereby accommodating and enhancing different learning styles.
- Quality assurance measures – as outlined in sections 6 and 7 of this Programme Specification – to ensure that all stakeholders (e.g. professional bodies, vendors, universities, businesses, colleges and students) can feel confident in the integrity and value of the qualifications.
- A qualification designed to meet the needs and expectations of students aspiring to work in an international business environment.

Qualification frameworks

Pearson BTEC Higher National qualifications are designated higher education qualifications in the UK. They are aligned to 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).

1.8 Collaborative development

Students completing their Pearson BTEC Higher Nationals in Computing will be aiming to go on to employment or progress to a final year at university. Therefore, it was essential that we developed these qualifications in close collaboration with experts from professional bodies, vendors, businesses and universities, and with the providers who will be delivering the qualifications.

We are very grateful to the university and further education tutors, employers, vendors, Professional Body representatives and other individuals who have generously shared their time and expertise to help us develop these new qualifications.

British Computing Society (BCS)

Institution of Engineering and Technology (IET)

University of Kent

University of Hull

ISC^2

Uxbridge College

The Tech Partnership

CompTIA

QA Apprenticeships

CISCO

Imago Solutions

National College for Digital Skills

These qualifications have also been approved by the following professional bodies as suitable qualifications for students wanting to gain membership. The professional bodies include:

- The British Computing Society
- The Institution of Engineering and Technology.

2. Programme purpose and objectives

2.1 Purpose of the Pearson BTEC Higher Nationals in Computing

The purpose of Pearson BTEC Higher Nationals in Computing is to develop students as professional, self-reflecting individuals able to meet the demands of employers in the computing sector and adapt to a constantly changing world. The qualifications aim to widen access to higher education and enhance the career prospects of those who undertake them.

2.2 Objectives of the Pearson BTEC Higher Nationals in Computing

The objectives of the Pearson BTEC Higher Nationals in Computing are as follows:

- To equip students with computing skills, knowledge and the understanding necessary to achieve high performance in the global computing environment.
- To provide education and training for a range of careers in computing, including network engineering, software engineering, data analytics, security, intelligent systems, and applications development.
- To provide insight and understanding into international computing operations and the opportunities and challenges presented by a globalised market place.
- To equip students with knowledge and understanding of culturally diverse organisations, cross-cultural issues, diversity and values.
- To provide opportunities for students to enter or progress in employment in computing, or progress to higher education qualifications such as an Honours degree in computing or a related area.
- To provide opportunities for students to develop the skills, techniques and personal attributes essential for successful working lives.
- To provide opportunities for those students with a global outlook to aspire to international career pathways.
- To provide opportunities for students to achieve a nationally recognised professional qualification.
- To provide opportunities for students to achieve vendor accredited certifications.
- To offer students the chance of career progression in their chosen field.
- To allow flexibility of study and to meet local or specialist needs.
- To offer a balance between employability skills and the knowledge essential for students with entrepreneurial, employment or academic aspirations.

We meet these objectives by:

- Providing a thorough grounding in computing principles at Level 4 that leads the student to a range of specialist progression pathways at Level 5 relating to individual professions within the computing sector.

- Enabling progression to a university degree by supporting the development of appropriate academic study skills.
- Enabling progression to further professional qualifications in specific computing areas by mapping to units in a range of vendor accredited certificates.

Who is this qualification for?

The Pearson BTEC Higher National qualifications in Computing are aimed at students wanting to continue their education through applied learning. Pearson BTEC Higher Nationals provide a wide-ranging study of the computing sector and are designed for students who wish to pursue or advance their career in computing. In addition to the knowledge, understanding and skills that underpin the study of the computing sector, Pearson BTEC Higher Nationals in computing give students experience of the breadth and depth of the sector that will prepare them for further study or training.

2.3 Aims of the Pearson BTEC Level 4 Higher National Certificate in Computing

The Pearson BTEC Level 4 Higher National Certificate in Computing offers students a broad introduction to the subject area via a mandatory core of learning, while allowing for the acquisition of skills and experience through the selection of optional units across a range of occupational sectors at Level 4. This effectively builds underpinning core skills while preparing the student for subject specialisation at Level 5. Students will gain a wide range of sector knowledge tied to practical skills gained in research, self-study, directed study and workplace scenarios.

At Level 4 students develop a broad knowledge and awareness of key aspects of the computing sector through six core units, which include one unit assessed by a Pearson-set assignment. The units are:

- Programming
- Networking
- Professional Practice
- Database Design & Development
- Security
- Managing a Successful Computing Project (Pearson-set unit).

The centre can also choose two further optional units at Level 4 from the following:

- Strategic Information Systems
- Computer Systems Architecture
- Software Development Lifecycles
- Website Design & Development
- Maths for Computing
- Data Analytics.

Graduates successfully completing the Pearson BTEC Higher National Certificate in Computing will be able to demonstrate a sound knowledge of the basic concepts of computing. They will be able to communicate accurately and appropriately and they will have the qualities needed for employment that requires some degree of personal responsibility. They will have developed a range of transferable skills to ensure effective team working, independent initiatives, organisational competence and problem-solving strategies. They will be adaptable and flexible in their approach to computing, show resilience under pressure, and meet challenging targets within a given resource.

2.4 Aims of the Pearson BTEC Level 5 Higher National Diploma in Computing

The Pearson BTEC Level 5 Higher National Diploma in Computing offers students six specialist pathways designed to support progression into relevant occupational areas or on to degree-level study. These pathways are linked to Professional Body standards and vendor accredited certification (where appropriate) and can provide professional status and progression to direct employment.

The Pearson BTEC Higher National Diploma offers the following specialist pathways for students who wish to concentrate on a particular aspect of computing:

- Network Engineering
- Software Engineering
- Data Analytics
- Security
- Intelligent Systems
- Applications Development.

There is also a non-specialist 'Computing' pathway, which allows students to complete a Pearson BTEC Higher National Diploma without committing to a particular professional specialism. This offers additional flexibility to providers and students.

Holders of the Pearson BTEC Higher National Diploma will have developed a sound understanding of the principles in their field of study and will have learned to apply those principles more widely. They will have learned to evaluate the appropriateness of different approaches to solving problems. They will be able to perform effectively in their chosen field and will have the qualities necessary for employment in situations requiring the exercise of personal responsibility and decision-making.

2.5 Use of Maths and English within the curriculum

Those working within the computing sector cannot just rely on their technical skills and must ensure **all** skills are relevant to increase employment opportunities. They will be required to communicate appropriately with stakeholders throughout their career and the ability to use maths and English in a professional context is an essential employability skill that must be developed at all levels of study.

Development of essential maths and English skills are embedded throughout these qualifications in accordance with industry requirements and below are some examples of how these skills are developed in the BTEC Higher Nationals Curriculum:

- Written reports
- Formal presentations
- Informal conversations
- Use of professional, sector-specific language
- Using binary data
- Understanding algorithms
- Calculating costs

Some aspects of computing require higher level maths skills than others, but throughout your studies you will be using some level of maths within the curriculum. It is vital that students taking a BTEC Higher National in Computing are aware that these skills will be required throughout their studies, and as part of learning activities and assessments to ensure their skills are in line with current industry standards.

2.6 The Skills Framework for the Information Age (SFIA)

The Skills Framework for the Information Age (SFIA) is the global skills and competency framework that describes IT roles and the skills needed for them. It is supported by companies, government and academic institutions worldwide. SFIA describes standard levels of responsibility and accountability used in the framework and are divided according to generic levels of responsibility and skills.

The SFIA Level 3 responsibilities would correlate with those expected from an employer of a HNC graduate.

SFIA levels of responsibility: Level 3

- Autonomy
    - Works under general direction. Uses discretion in identifying and responding to complex issues and assignments. Usually receives specific instructions and has work reviewed at frequent milestones. Determines when issues should be escalated to a higher level.
- Influence
    - Interacts with and influences colleagues. Has working level contact with customers, suppliers and partners. May supervise others or make decisions which impact the work assigned to individuals or phases of projects.
- Complexity
    - Performs a range of work, sometimes complex and non-routine, in a variety of environments.

- Business skills
    - Demonstrates an analytical and systematic approach to issue resolution. Takes the initiative in identifying and negotiating appropriate personal development opportunities. Demonstrates effective communication skills. Contributes fully to the work of teams. Plans, schedules and monitors own work (and that of others where applicable) competently within limited deadlines and according to relevant legislation, standards and procedures. Appreciates the wider business context, and how own role relates to other roles and to the business of the employer or client.

The SFIA Level 4 responsibilities would correlate with those expected from an employer of a HND graduate.

SFIA levels of responsibility: Level 4

- Autonomy
    - Works under general direction within a clear framework of accountability. Exercises substantial personal responsibility and autonomy. Plans own work to meet given objectives and processes.
- Influence
    - Influences customers, suppliers and partners at account level. May have some responsibility for the work of others and for the allocation of resources. Participates in external activities related to own specialism. Makes decisions which influence the success of projects and team objectives.
- Complexity
    - Work includes a broad range of complex technical or professional activities, in a variety of contexts. Investigates, defines and resolves complex issues.
- Business skills
    - Selects appropriately from applicable standards, methods, tools and applications. Communicates fluently, orally and in writing, and can present complex information to both technical and non-technical audiences. Facilitates collaboration between stakeholders who share common objectives. Plans, schedules and monitors work to meet time and quality targets. Rapidly absorbs new information and applies it effectively. Maintains an awareness of developing technologies and their application and takes some responsibility for driving own development.

For full details of the skills covered in each category for SFIA Levels 3 and 4, see *Appendix 3*.

The SFIA framework was used throughout the design and content creation of Pearson BTEC Higher Nationals in Computing.

The National Occupational Standards for IT professionals are industry standards for skills, developed for the Trailblazer Apprenticeships which have been developed in line with the SFIA framework.

CompTIA and BCS have mapped their membership schemes to the SFIA framework.

By using the SFIA framework the Pearson BTEC Higher Nationals in Computing will be aligned with both the Trailblazer Apprenticeships in Digital Industries and Professional Body memberships.

2.7 What could these qualifications lead to?

The Pearson BTEC Higher National Certificate provides a solid grounding in computing at Level 4, vendor-accredited certification and Professional Body membership, all of which students can build on should they decide to continue their studies beyond the Certificate stage. The Pearson BTEC Higher National Diploma allows students to specialise by committing to specific career paths and progression routes to degree-level study.

On successful completion of the Pearson BTEC Higher National Diploma at Level 5, students can develop their careers in the computing sector through:

- Entering employment
- Continuing existing employment
- Linking with the appropriate vendor accredited certificates
- Committing to Continuing Professional Development (CPD)
- Progressing to university.

The Level 5 Higher National Diploma is recognised by higher education providers as meeting admission requirements to many relevant computing-related courses.

Details of entry requirements for BTEC Higher National graduates into degree programmes at institutions in the UK and internationally can be found on the Degree Course Finder website (http://degreecoursefinder.pearson.com/).

The skills offered as part of the Pearson BTEC Higher National Diploma can provide graduates with the opportunity to work in many different areas of the computing sector. Below are some examples of job roles each qualification could lead to:

Pathway	**Job Roles**
Network Engineering	Network Engineer Systems Architect Computer Service and Repair Technician Network Manager
Software Engineering	Software Developer Systems Designer Business Analyst Games Developer Web Developer
Data Analytics	Data Analyst Business Analyst Marketing Analyst Data Engineer Fraud Analyst Operation Research Scientist

Pathway	Job Roles
Security	Forensic Computer Analysts IT Security Coordinator Ethical Hacker Fraud Analyst
Intelligent Systems	Software Developer Online Reputation Manager Machine Learning Software Engineer Data Scientist Robotics Engineer
Applications Development	HCI Designer Games Developer Web Developer
General / All Pathways	Systems Analyst Data Designer Systems Tester Database Administrator IT Project Manager IT Support Technician Web Designer

These job roles are based on descriptions from The National Occupational Standards for IT professionals – industry standards for skills, developed in collaboration with employers, professional bodies and others which make it easier for employers to describe job roles, externally and internally. The development of IT Professional Standards was undertaken by The Tech Partnership.

2.8 How Pearson BTEC Higher Nationals in Computing provide both transferable employability skills and academic study skills

Students need both relevant qualifications and employability skills to enhance their career prospects and contribute to their personal development. Pearson BTEC Higher National Computing qualifications embed the development of key skills throughout the programme; attributes and strengths required by 21st century employers.

Where employability skills are referred to in this specification, this generally refers to skills in three main categories:

- **Cognitive and problem-solving skills**: critical thinking, approaching non-routine problems by applying expert and creative solutions, use of systems and digital technology, generating and communicating ideas creatively.
- **Intra-personal skills**: self-management, adaptability and resilience, self-monitoring and self-development, self-analysis and reflection, planning and prioritising.
- **Interpersonal skills**: effective communication and articulation of information, working collaboratively, negotiating and influencing, self-presentation.

Pearson Sample Assessment Materials (SAMs) make recommendations for a range of real or simulated assessment activities, for example, group work where appropriate, to encourage development of collaborative and interpersonal skills or a solution-focused case study to provide the opportunity to develop cognitive skills. There are specific requirements for the assessment of these skills, as relevant, within the assessment grids for each unit. SAMs are for guidance and support only and can be customised and amended according to localised needs and requirements. All assignments must still be moderated as per the internal verification process.

Students can also benefit from opportunities for deeper learning, where they are able to make connections between units and select areas of interest for detailed study. In this way Pearson BTEC Higher Nationals provide a vocational context in which students can develop the knowledge and academic study skills required for progression to university degree courses, including:

- Active research skills
- Effective writing skills
- Analytical skills
- Critical thinking
- Creative problem-solving
- Decision-making
- Team building
- Exam preparation skills
- Digital literacy
- Competence in assessment methods used in higher education.

To support you in developing these skills in your students, we have developed a map of higher education relevant transferable and academic study skills, available in appendices.

3. Planning your programme

3.1 Delivering the Pearson BTEC Higher Nationals in Computing

You play a central role in helping your students to choose the right Pearson BTEC Higher National qualification.

Assess your students very carefully to ensure that they take the right qualification and the right pathways or optional units, to allow them to progress to the next stage. You should check the qualification structures and unit combinations carefully when advising students.

You will need to ensure that your students have access to a full range of information, advice and guidance in order to support them in making the necessary qualification and unit choices. When students are recruited, you need to give them accurate information on the title and focus of the qualification for which they are studying.

While there are six named pathways within the Pearson BTEC Higher National Diploma, centres can accommodate other routes through the qualification using the optional units within the pathways.

For example:

- A centre could deliver the Pearson BTEC Level 5 Higher National Diploma in Computing (Applications Development) and choose between 'Unit 31: Games Engine & Scripting', 'Unit 32: Game Design Theory' and 'Unit 47: Games Development' as the two optional units to make up this qualification which would give the student a games computing experience.
- A centre could deliver the Pearson BTEC Level 5 Higher National Diploma in Computing and choose 'Unit 39: E-Commerce & Strategy' as one of the five optional units to make up this qualification which would give the student a business computing experience.

3.2 Entry requirements and admissions

Although Pearson do not specify formal entry requirements, as a centre it is your responsibility to ensure that the students you recruit have a reasonable expectation of success on the programme.

For students who have recently been in education, the entry profile is likely to include one of the following:

- A BTEC Level 3 qualification in Computing
- A GCE Advanced Level profile that demonstrates strong performance in a relevant subject or adequate performance in more than one GCE subject. This profile is likely to be supported by GCSE grades at A* to C (or equivalent)
- Other related Level 3 qualifications
- An Access to Higher Education Certificate awarded by an approved further education institution
- Related work experience
- An international equivalent of the above.

Centres may wish to consider applicants' prior learning when considering their acceptance on a Pearson BTEC Higher Nationals, through Recognition of Prior Learning. (For further information please refer to **Section 8** of this document.)

English language requirements

Pearson's mission is to help people make more of their lives through learning. In order for students to be successful on Pearson BTEC Higher National qualifications which are **both** taught and assessed in English, it is critical that they have an appropriate level of English language skills.

The following clarifies the requirements for all centres when recruiting applicants on to new Pearson BTEC Higher National qualifications.

All centres delivering the new Pearson BTEC Higher National qualifications must ensure that all students who are non-native English speakers and who have not undertaken their final two years of schooling in English, can demonstrate capability in English at a standard equivalent to the levels identified below, before being recruited to the programme **where the programme is both taught and assessed in English**:

- Common European Framework of Reference (CEFR) level B2
- PTE **51**
- IELTS **5.5**; Reading and Writing must be at **5.5**
- or equivalent.

It is up to the centre to decide what proof will be necessary to evidence individual student proficiency.

The following clarifies the requirements for all centres when recruiting applicants on to new Pearson BTEC Higher National qualifications which are taught in a language other than English, but are assessed in English.

All centres delivering the new Pearson BTEC Higher National qualifications **wholly or partially** in a language other than English, but who are assessed in English, must ensure that all students can demonstrate capability in English at a standard equivalent to the levels identified below, on completion of the programme:

- Common European Framework of Reference (CEFR) level B2
- PTE **51**
- IELTS **5.5;** Reading and Writing must be at **5.5**
- or equivalent.

It is up to the centre to decide what proof will be necessary to evidence individual student proficiency.

Centre approval

To ensure that centres are ready to assess students and that we can provide the support that is needed all centres must be approved before they can offer these qualifications. For more information about becoming a centre and seeking approval to run our qualifications please visit the support section on our website (http://qualifications.pearson.com/).

Level of sector knowledge required

We do not set any requirements for tutors, but we do recommend that centres assess the overall skills and knowledge of the teaching team, which should be relevant, up to date and at the appropriate level.

Resources required

As part of your centre approval, you will need to show that the necessary material resources and work spaces are available to deliver Pearson BTEC Higher Nationals. For some units, specific resources are required, this is clearly indicated in the unit descriptors.

HN Global support

HN Global is an online resource that supports centre planning and delivery of Pearson BTEC Higher Nationals by providing appropriate teaching and learning resources. For further information see sections 5 and 6 of this Programme Specification.

Modes of delivery

Subject to approval by Pearson, centres are free to deliver Pearson BTEC Higher Nationals using modes of delivery that meet the needs of their students. We recommend making use of a wide variety of modes, including:

- Full-time
- Part-time
- Blended learning.

Recommendations for employer engagement

Pearson BTEC Higher Nationals are vocational qualifications and as an approved centre you are encouraged to work with employers on the design, delivery and assessment of the course. This will ensure that students enjoy a programme of study that is engaging and relevant, and which equips them for progression. There are suggestions in section 5.2 about how employers could become involved in delivery and/or assessment, but these are not intended to be exhaustive and there will be other possibilities at a local level.

Support from Pearson

We provide a range of support materials, including Schemes of Work and suggested assignments, with supporting templates. You will be allocated an External Examiner early in the planning stage, to support you with planning your assessments, and there will be training events and support from our Subject Leads.

Student employability

All Pearson BTEC Higher Nationals have been designed and developed with consideration of National Occupational Standards, where relevant, and have been mapped to relevant Professional Body standards and vendor accreditation requirements (see *Appendices 1 & 2*).

Employability skills such as team working and project management as well as practical hands-on skills have been built into the design of the learning aims and content. This gives you the opportunity to use relevant contexts, scenarios and materials to enable students to develop a portfolio of evidence demonstrating the breadth of their skills and knowledge in a way that equips them for employment.

3.3 Access to study

This section focuses on the administrative requirements for delivering a Pearson BTEC Higher National qualification. It will be of value to Quality Nominees, Programme Leaders and Examinations Officers.

Our policy regarding access to our qualifications is that:

- They should be available to everyone who is capable of reaching the required standards.
- They should be free from any barriers that restrict access and progression.

There should be equal opportunities for all those wishing to access the qualifications. We refer Centres to our Pearson Equality and Diversity Policy, which can be found in the support section of our website (http://qualifications.pearson.com/).

Centres are required to recruit students to Pearson BTEC Higher National programmes with integrity. They will need to make sure that applicants have relevant information and advice about the qualification, to make sure it meets their needs. Centres should review the applicant's prior qualifications and/or experience to consider whether this profile shows that they have the potential to achieve the qualification. For students with disabilities and specific needs, this review will need to take account of the support available to the student during the teaching and assessment of the qualification. For further guidance and advice please refer to section 9 on reasonable adjustments.

3.4 Student registration and entry

Within 30 days (home students) and 60 days (international students) of enrolment all students should be registered for the qualification, and appropriate arrangements made for internal and external verification. For information on making registrations for the qualification, you will need to refer to the information manual available in the support section of our website (http://qualifications.pearson.com/).

Students can be formally assessed only for a qualification on which they are registered. If students' intended qualifications change (for example, if a student decides to choose a different specialist pathway), then the centre must transfer the student to the chosen pathway appropriately. Please note that student work cannot be sampled if the student is not registered or is registered on an incorrect pathway.

3.5 Access to assessments

Assessments need to be administered carefully, to ensure that all students are treated fairly, and that results and certification are issued on time, allowing students to move on to chosen progression opportunities.

Our equality policy requires that all students should have equal opportunity to access our qualifications and assessments, and that our qualifications are awarded in a way that is fair to every student. We are committed to making sure that:

- Students with a protected characteristic (as defined in legislation) are not, when they are undertaking one of our qualifications, disadvantaged in comparison to students who do not share that characteristic.
- All students achieve the recognition they deserve for undertaking a qualification and that this achievement can be compared fairly to the achievement of their peers.

Further information on access arrangements can be found on the Joint Council for Qualifications website (http://www.jcq.org.uk/).

3.6 Administrative arrangements for internal assessment

Records

You are required to retain records of assessment for each student. Records should include assessments taken, decisions reached and any adjustments or appeals. Further information on quality and assessment can be found in our UK and international guides available in the support section on our website (http://qualifications.pearson.com/). We may ask to audit your records, so they must be retained as specified. All student work must be retained for **a minimum of 12 weeks** after certification has taken place.

Reasonable adjustments to assessment

A reasonable adjustment is one that is made before a student takes an assessment, to ensure that he or she has fair access to demonstrate the requirements of the assessments.

You are able to make adjustments to internal assessments to take account of the needs of individual students. In most cases this can be achieved through a defined time extension or by adjusting the format of evidence. We can advise you if you are uncertain as to whether an adjustment is fair and reasonable. You need to plan for time to make adjustments, if necessary.

Further details on how to make adjustments for students with protected characteristics are available on the support section of our website (http://qualifications.pearson.com/).

Special consideration

Special consideration is given after an assessment has taken place for students who have been affected by adverse circumstances, such as illness, and require an adjustment of grade to reflect normal level of attainment. You must operate special consideration in line with Pearson policy (see previous paragraph). You can provide special consideration related to the period of time given for evidence to be provided, or for the format of the assessment (if it is equally valid). You may not substitute alternative forms of evidence to that required in a unit, or omit the application of any assessment criteria to judge attainment. Pearson can consider applications for special consideration in line with the policy, which can be found in the document linked above.

Please note that your centre must have a policy for dealing with mitigating circumstances if students are affected by adverse circumstances, such as illness, which result in non-submission or late submission of assessment.

Appeals against assessment

Your centre must have a policy for dealing with appeals from students. These appeals may relate to assessment decisions being incorrect or assessment not being conducted fairly. The first step in such a policy could be a consideration of the evidence by a Programme Leader or other member of the programme team. The assessment plan should allow time for potential appeals after assessment decisions have been given to students. If there is an appeal by a student, you must document the appeal and its resolution. Students have a final right of appeal to Pearson, but only if the procedures that you have put in place have been followed. Further details of our policy on enquiries and appeals is available on the support section of our website (http://qualifications.pearson.com/).

If your centre is located in England or Wales and the student is still dissatisfied with the final outcome of their appeal s/he can make a further appeal to the Office of the Independent Adjudicator (OIA) by emailing: enquiries@oiahe.org.uk. In Northern Ireland a further appeal may be lodged with the Northern Ireland Public Service Ombudsman (NIPSO) by emailing: nipso@nipso.org.uk.

3.7 Dealing with malpractice in assessment

'Malpractice' means acts that undermine the integrity and validity of assessment, the certification of qualifications, and/or that may damage the authority of those responsible for delivering the assessment and certification. Malpractice may arise, or be suspected, in relation to any unit or type of assessment within the qualification.

Pearson does not tolerate actions (or attempted actions) of malpractice by students, centre staff or centres in connection with Pearson qualifications. Pearson may impose penalties and/or sanctions on students, centre staff or centres where incidents (or attempted incidents) of malpractice have been proven.

Further details regarding malpractice and advice on preventing malpractice by students, can be found in the support section of our website (http://qualifications.pearson.com/).

In the interests of students and centre staff, centres need to respond effectively and openly to all requests relating to an investigation into an incident of suspected malpractice. The procedures we ask you to adopt when tackling malpractice vary between units that are internally assessed and those that are externally assessed.

Internally assessed units

Centres are required to take steps to prevent malpractice and to investigate instances of suspected malpractice. Students must be given information that explains what malpractice is for internal assessment and how suspected incidents will be dealt with by the centre. Full information on dealing with malpractice and plagiarism is available on the support section of our website (http://qualifications.pearson.com/). It provides full information on the actions we expect you to take.

Pearson may conduct investigations if it is believed that a centre is failing to conduct internal assessment according to Pearson policies. The above document gives further information, provides examples, and details the penalties and sanctions that may be imposed.

Student malpractice

Heads of centres are required to report incidents of any suspected student malpractice that occur during Pearson external assessments. We ask that centres do so by completing JCQ Form M1 from the Joint Council for Qualifications website (http://www.jcq.org.uk/) and emailing it, along with any accompanying documents, (signed statements from the student, invigilator, copies of evidence, etc.), to the Investigations Team at pqsmalpractice@pearson.com. The responsibility for determining appropriate sanctions or penalties to be imposed on students lies with Pearson.

Students must be informed at the earliest opportunity of the specific allegation and the centre's malpractice policy, including the right of appeal. Students found guilty of malpractice may be disqualified from the qualification for which they have been entered with Pearson.

Tutor/centre malpractice

Heads of centres are required to inform Pearson's Investigations Team of any incident of suspected malpractice by centre staff, before any investigation is undertaken. Heads of centres are requested to inform the Investigations Team by submitting a JCQ Form M2b from the Joint Council for Qualifications website (http://www.jcq.org.uk/) with supporting documentation to pqsmalpractice@pearson.com. Where Pearson receives allegations of malpractice from other sources (for example, Pearson staff or anonymous informants), the Investigations Team will conduct the investigation directly or may ask the head of centre to assist.

Incidents of maladministration (accidental errors in the delivery of Pearson qualifications that may affect the assessment of students) should also be reported to the Investigations Team, using the same method.

Heads of centres/Principals/Chief Executive Officers or their nominees are required to inform students and centre staff suspected of malpractice of their responsibilities and rights; see 6.15 of *JCQ Suspected Malpractice in Examinations and Assessments Policies and Procedures* (www.jcq.org.uk).

Pearson reserves the right in cases of suspected malpractice to withhold the issue of results and/or certificates while an investigation is in progress. Depending on the outcome of the investigation, results and/or certificates may be released or withheld. We reserve the right to withhold certification when undertaking investigations, audits and quality assurances processes. You will be notified within a reasonable period of time if this occurs.

Sanctions and appeals

Wherever malpractice is proven, we may impose sanctions or penalties. Where student malpractice is evidenced, penalties may be imposed such as:

- Disqualification from the qualification
- Being barred from registration for Pearson qualifications for a specified period of time.

If we are concerned about your centre's quality procedures, we may impose sanctions such as:

- Working with you to create an improvement action plan
- Requiring staff members to receive further training
- Placing temporary blocks on your certificates
- Placing temporary blocks on registrations of students
- Debarring staff members or the centre from delivering Pearson qualifications
- Suspending or withdrawing centre approval status.

Your centre will be notified if any of these apply.

Pearson has established procedures for centres that are considering appeals against penalties and sanctions arising from malpractice. Appeals against a decision made by Pearson will normally be accepted only from heads of centres (on behalf of students and/or members or staff) and from individual members (in respect of a decision taken against them personally). Further information on appeals can be found in our Enquiries and Appeals Policy available in the support section on our website (http://qualifications.pearson.com/).

In the initial stage of any aspect of malpractice, please notify the Investigations Team by email (pqsmalpractice@pearson.com), who will inform you of the next steps.

4. Programme structure

4.1 Units, credits and Total Qualification Time (TQT)

The Pearson BTEC Higher National Certificate (HNC) is a Level 4 qualification made up of 120 credits. It is usually studied full-time over one year, or part-time over two years.

The Pearson BTEC Higher National Diploma (HND) is a Level 4 and Level 5 qualification made up of 240 credits. It is usually studied full-time over two years, or part-time over four years.

Pearson would expect that a BTEC Higher National Diploma student would have achieved at least 90 credits at Level 4 before progressing to Level 5 units. This allows for the students to submit the remaining 30 credits at Level 4 while undertaking their Level 5 study.

Students undertaking a Pearson BTEC Higher National Diploma who fail to successfully complete the full qualification may be awarded a HNC, if their credit achievement permits.

Pearson BTEC Higher Nationals consist of core units, specialist units and optional units:

- Core are mandatory
- Specialist units are designed to provide a specific occupational focus to the qualification and are aligned to vendor accredited certification
- Required combinations of optional units are clearly set out in the tables below.

All units are usually 15 credits in value, or a multiple thereof. These units have been designed from a learning time perspective, and are expressed in terms of **Unit Learning Hours (ULH)**.

- **Unit Learning Hours (ULH)** represent the total hours that a student needs to achieve the required learning outcomes, for a given *Unit*.
- **Total Qualification Time (TQT)** is an estimate of the total amount of time that could reasonably be expected to be required for a student to achieve and demonstrate the achievement of the level of attainment necessary for the award of a *qualification*.

ULH contribute to the overall Total Qualification Time (TQT). TQT includes undertaking each of the activities of Guided Learning, Directed Learning and Invigilated Assessment. Each 15-credit unit approximates to a 150 Unit Learning Hours (ULH); including 60 hours of Guided Learning.

Total Qualification Time (TQT) Higher National Certificate (HNC) = 1,200

Total Qualification Time (TQT) Higher National Diploma (HND) = 2,400

Examples of activities which can contribute to Total Qualification Time include:

- Guided Learning
- Independent and unsupervised research/learning
- Unsupervised compilation of a portfolio of work experience
- Unsupervised e-learning
- Unsupervised e-assessment

- Unsupervised coursework
- Watching a pre-recorded podcast or webinar
- Unsupervised work-based learning.

Guided Learning Hours (GLH) are defined as the time when a tutor is present to give specific guidance towards the learning aim being studied on a programme. This definition includes lectures, tutorials and supervised study in, for example, open learning centres and learning workshops. Guided Learning includes any supervised assessment activity; this includes invigilated examination and observed assessment and observed work-based practice.

Total Guided Learning (GL) Higher National Certificate (HNC) = 480 hours

Total Guided Learning (GL) Higher National Diploma (HND) = 960 hours

Some examples of activities which can contribute to Guided Learning include:

- Classroom-based learning supervised by a tutor
- Work-based learning supervised by a tutor
- Live webinar or telephone tutorial with a tutor in real time
- E-learning supervised by a tutor in real time
- All forms of assessment which take place under the immediate guidance or supervision of a tutor or other appropriate provider of education or training, including where the assessment is competency-based and may be turned into a learning opportunity.

4.2 Programme structures

The programme structures specify:

- The total credit value of the qualification
- The minimum credit to be achieved at the level of the qualification
- The core units
- The specialist units
- The optional units
- The maximum credit value in units that can be centre commissioned.

When combining units for a Pearson BTEC Higher National qualification, it is the centre's responsibility to make sure that the correct unit combinations are followed.

Pearson BTEC Level 4 Higher National Certificate in Computing

1 Qualification credit value: a minimum of 120 credits. This is made up of eight units, each with a value of 15 credits.

2 **Total Qualification Time (TQT)** Higher National Certificate (HNC) = 1,200

3 **Total Guided Learning Hours (GLH)** Higher National Certificate (HNC) = 480

4 There is a required mix of core, specialist and optional units totalling 120 credits. All units are at Level 4.

5 In some cases a maximum of 30 credits can be imported from another RQF Pearson BTEC Higher National qualification and/or from units designed by the centre and approved by Pearson. Core units may **not** be substituted and are **mandatory**. For more information please refer to Higher National Commissioned Qualifications.

6 Please note that some specialist units are available as optional units and some optional units are available as specialist units.

Pearson BTEC Level 4 Higher National Certificate in Computing		Unit credit	Level
Core Unit Mandatory	**1 Programming**	15	4
Core Unit Mandatory	**2 Networking**	15	4
Core Unit Mandatory	**3 Professional Practice**	15	4
Core Unit Mandatory	**4 Database Design & Development**	15	4
Core Unit Mandatory	**5 Security**	15	4
Core Unit Mandatory	**6 Managing a Successful Computing Project (Pearson-set)**	15	4
Optional Unit	**7 Strategic Information Systems**	15	4
Optional Unit	**8 Computer Systems Architecture**	15	4
Optional Unit	**9 Software Development Lifecycles**	15	4
Optional Unit	**10 Website Design & Development**	15	4
Optional Unit	**11 Maths for Computing**	15	4
Optional Unit	**12 Data Analytics**	15	4

Pearson BTEC Level 5 Higher National Diploma in Computing

The Level 5 Higher National Diploma consists of the Level 4 Higher National Certificate (above) plus an additional 120 credits at Level 5 delivered via the general Computing pathway or one of the following six specialist pathways:

- Network Engineering
- Software Engineering
- Data Analytics
- Security
- Intelligent Systems
- Applications Development.

1 Qualification credit value: a minimum of 240 credits of which 120 credits are at Level 5, and 120 credits are at Level 4 and usually attained via the HNC.

2 **Total Qualification Time (TQT)** Higher National Diploma (HND) = 2,400.

3 **Total Guided Learning Hours (GLH)** Higher National Diploma (HND) = 960.

4 There is a required mix of core, specialist and optional units for each pathway. The core units required for each Level 5 pathway (in addition to the specialist units) are 'Unit 13: Computing Research Project' which is weighted at 30 credits, and 'Unit 14: Business Intelligence', weighted at 15 credits.

5 The requirements of the Higher National Certificate (or equivalent) have to be met. In some cases a maximum of 60 credits can be imported from another RQF Pearson BTEC Higher National qualification and/or from units designed by the centre and approved by Pearson. Core units and specialist units may **not** be substituted.

6 Please note that some specialist units are available as optional units and some optional units are available as specialist units.

The pathways and unit combinations are as follows; for the list of optional units for all pathways at Level 5, please see following pages.

Combination Rules:

In order to ensure BTEC HND students have the skills required to achieve on specialist pathways we strongly advise that students intending to study the BTEC Higher National Diploma (Network Engineering), BTEC Higher National Diploma (Software Engineering) or the BTEC Higher National Diploma (Data Analytics) also study 'Unit 11: Maths for Computing' at Level 4.

We also advise that students intending to study the BTEC Higher National Diploma (Data Analytics) also study 'Unit 12: Data Analytics' at Level 4.

Students studying on the BTEC Higher National Diploma (Security) are required to study 'Unit 23: Cryptography', before they study 'Unit 25: Information Security Management'.

Pearson BTEC Level 5 Higher National Diploma in Computing **Core units:**		**Unit credit**	**Level**
Level 4 units:			
Core Unit Mandatory	**1 Programming**	15	4
Core Unit Mandatory	**2 Networking**	15	4
Core Unit Mandatory	**3 Professional Practice**	15	4
Core Unit Mandatory	**4 Database Design & Development**	15	4
Core Unit Mandatory	**5 Security**	15	4
Core Unit Mandatory	**6 Managing a Successful Computing Project (Pearson-set)**	15	4
Optional Unit	**Plus one Optional Level 4 Unit (see below)**	15	4
Optional Unit	**Plus one Optional Level 4 Unit (see below)**	15	4
Level 5 Units: *** Please note that centres can choose any of the 5 optional units from the units listed in the optional unit bank. The units have been grouped according to sector specialism for ease of recognition. It is strongly advised to choose one unit from each optional group to deliver a comprehensive general computing qualification.**			
Core Unit Mandatory	**13 Computing Research Project (Pearson-set)**	30	5
Core Unit Mandatory	**14 Business Intelligence**	15	5

Optional Unit	**Plus one Optional unit from any optional group (see below)**	15	5
Optional Unit	**Plus one Optional unit from any optional group (see below)**	15	5
Optional Unit	**Plus one Optional unit from any optional group (see below)**	15	5
Optional Unit	**Plus one Optional unit from any optional group (see below)**	15	5
Optional Unit	**Plus one Optional unit from any optional group (see below)**	15	5
Optional Unit Bank			
Optional Level 4 units:			
Optional Unit	**7 Strategic Information Systems**	15	4
Optional Unit	**8 Computer Systems Architecture**	15	4
Optional Unit	**9 Software Development Lifecycles**	15	4
Optional Unit	**10 Website Design & Development**	15	4
Optional Unit	**11 Maths for Computing**	15	4
Optional Unit	**12 Data Analytics**	15	4
Optional Level 5 units:			
Group A: Network Engineering			
Optional Unit	**15 Transport Network Design**	15	5
Optional Unit	**16 Cloud Computing**	15	5
Optional Unit	**17 Network Security**	15	5

Group B: Software Engineering			
Optional Unit	**18 Discrete Maths**	15	5
Optional Unit	**19 Data Structures & Algorithms**	15	5
Optional Unit	**20 Advanced Programming**	15	5
Group C: Data Analytics			
Optional Unit	**18 Discrete Maths**	15	5
Optional Unit	**21 Data Mining**	15	5
Optional Unit	**22 Applied Analytical Models**	15	5
Group D: Security			
Optional Unit	**23 Cryptography**	15	5
Optional Unit	**24 Forensics**	15	5
Optional Unit	**25 Information Security Management**	15	5
Group E: Intelligent Systems			
Optional Unit	**26 Machine Learning**	15	5
Optional Unit	**27 Artificial Intelligence**	15	5
Optional Unit	**19 Data Structures & Algorithms**	15	5
Group F: Application Development			
Optional Unit	**28 Prototyping**	15	5
Optional Unit	**29 Application Program Interfaces**	15	5
Optional Unit	**30 Application Development**	15	5

Other Optional Units			
Optional Unit	**31 Games Engine & Scripting**	15	5
Optional Unit	**32 Game Design Theory**	15	5
Optional Unit	**33 Analytical Methods**	15	5
Optional Unit	**34 Systems Analysis & Design**	15	5
Optional Unit	**35 Network Management**	15	5
Optional Unit	**36 Client/Server Computing Systems**	15	5
Optional Unit	**37 Architecture**	15	5
Optional Unit	**38 Database Management Systems**	15	5
Optional Unit	**39 E-Commerce & Strategy**	15	5
Optional Unit	**40 User Experience & Interface Design**	15	5
Optional Unit	**41 Analytic Architecture Design**	15	5
Optional Unit	**42 Risk Analysis & System Testing**	15	5
Optional Unit	**43 Internet of Things**	15	5
Optional Unit	**44 Robotics**	15	5
Optional Unit	**45 Emerging Technologies**	15	5
Optional Unit	**46 Virtual & Augmented Reality Development**	15	5
Optional Unit	**47 Games Development**	15	5
Optional Unit	**48 Systems Integration**	15	5
Optional Unit	**49 Operating Systems**	15	5

Pearson BTEC Level 5 Higher National Diploma in Computing (Network Engineering)		Unit credit	Level
Level 4 units:			
Core Unit Mandatory	**1 Programming**	15	4
Core Unit Mandatory	**2 Networking**	15	4
Core Unit Mandatory	**3 Professional Practice**	15	4
Core Unit Mandatory	**4 Database Design & Development**	15	4
Core Unit Mandatory	**5 Security**	15	4
Core Unit Mandatory	**6 Managing a Successful Computing Project (Pearson-set)**	15	4
Optional Unit	**Plus one Optional Level 4 Unit (see below)**	15	4
Optional Unit	**Plus one Optional Level 4 Unit (see below)**	15	4
Level 5 units:			
Core Unit Mandatory	**13 Computing Research Project (Pearson-set)**	30	5
Core Unit Mandatory	**14 Business Intelligence**	15	5
Specialist Unit *Mandatory*	**15 Transport Network Design**	15	5
Specialist Unit *Mandatory*	**16 Cloud Computing**	15	5

Specialist Unit *Mandatory*	**17 Network Security**	15	5
Optional Unit	**Plus one Optional Level 5 unit (see below)**	15	5
Optional Unit	**Plus one Optional Level 5 unit (see below)**	15	5
Optional Unit Bank			
Optional units Level 4:			
Optional Unit	**7 Strategic Information Systems**	15	4
Optional Unit	**8 Computer Systems Architecture**	15	4
Optional Unit	**9 Software Development Lifecycles**	15	4
Optional Unit	**10 Website Design & Development**	15	4
Optional Unit	**11 Maths for Computing**	15	4
Optional Unit	**12 Data Analytics**	15	4
Optional units Level 5:			
Optional Unit	**19 Data Structures & Algorithms**	15	5
Optional Unit	**20 Advanced Programming**	15	5
Optional Unit	**21 Data Mining**	15	5
Optional Unit	**22 Applied Analytical Models**	15	5
Optional Unit	**23 Cryptography**	15	5
Optional Unit	**24 Forensics**	15	5
Optional Unit	**25 Information Security Management**	15	5
Optional Unit	**27 Artificial Intelligence**	15	5
Optional Unit	**28 Prototyping**	15	5

Optional Unit	**29 Application Program Interfaces**	15	5
Optional Unit	**30 Application Development**	15	5
Optional Unit	**31 Games Engine & Scripting**	15	5
Optional Unit	**32 Game Design Theory**	15	5
Optional Unit	**33 Analytical Methods**	15	5
Optional Unit	**34 Systems Analysis & Design**	15	5
Optional Unit	**35 Network Management**	15	5
Optional Unit	**36 Client/Server Computing Systems**	15	5
Optional Unit	**37 Architecture**	15	5
Optional Unit	**38 Database Management Systems**	15	5
Optional Unit	**39 E-Commerce & Strategy**	15	5
Optional Unit	**40 User Experience & Interface Design**	15	5
Optional Unit	**41 Analytic Architecture Design**	15	5
Optional Unit	**42 Risk Analysis & System Testing**	15	5
Optional Unit	**43 Internet of Things**	15	5
Optional Unit	**44 Robotics**	15	5
Optional Unit	**45 Emerging Technologies**	15	5
Optional Unit	**46 Virtual & Augmented Reality Development**	15	5
Optional Unit	**47 Games Development**	15	5
Optional Unit	**48 Systems Integration**	15	5
Optional Unit	**49 Operating Systems**	15	5

Pearson BTEC Level 5 Higher National Diploma in Computing (Software Engineering)		Unit credit	Level
Level 4 units:			
Core Unit *Mandatory*	**1 Programming**	15	4
Core Unit *Mandatory*	**2 Networking**	15	4
Core Unit *Mandatory*	**3 Professional Practice**	15	4
Core Unit *Mandatory*	**4 Database Design & Development**	15	4
Core Unit *Mandatory*	**5 Security**	15	4
Core Unit *Mandatory*	**6 Managing a Successful Computing Project (Pearson-set)**	15	4
Optional Unit	**Plus one Optional Level 4 unit (see below)**	15	4
Optional Unit	**Plus one Optional Level 4 unit (see below)**	15	4
Level 5 units:			
Core Unit *Mandatory*	**13 Computing Research Project (Pearson-set)**	30	5
Core Unit *Mandatory*	**14 Business Intelligence**	15	5
Specialist Unit *Mandatory*	**18 Discrete Maths**	15	5
Specialist Unit *Mandatory*	**19 Data Structures & Algorithms**	15	5

Specialist Unit *Mandatory*	**20 Advanced Programming**	15	5
Optional Unit	**Plus one Optional Level 5 unit (see below)**	15	5
Optional Unit	**Plus one Optional Level 5 unit (see below)**	15	5
Optional Unit Bank			
Optional units Level 4:			
Optional Unit	**7 Strategic Information Systems**	15	4
Optional Unit	**8 Computer Systems Architecture**	15	4
Optional Unit	**9 Software Development Lifecycles**	15	4
Optional Unit	**10 Website Design & Development**	15	4
Optional Unit	**11 Maths for Computing**	15	4
Optional Unit	**12 Data Analytics**	15	4
Optional units Level 5:			
Optional Unit	**17 Network Security**	15	5
Optional Unit	**21 Data Mining**	15	5
Optional Unit	**22 Applied Analytical Models**	15	5
Optional Unit	**23 Cryptography**	15	5
Optional Unit	**24 Forensics**	15	5
Optional Unit	**25 Information Security Management**	15	5
Optional Unit	**26 Machine Learning**	15	5
Optional Unit	**27 Artificial Intelligence**	15	5
Optional Unit	**28 Prototyping**	15	5

Optional Unit	**29 Application Program Interfaces**	15	5
Optional Unit	**30 Application Development**	15	5
Optional Unit	**31 Games Engine & Scripting**	15	5
Optional Unit	**32 Game Design Theory**	15	5
Optional Unit	**34 Systems Analysis & Design**	15	5
Optional Unit	**35 Network Management**	15	5
Optional Unit	**36 Client/Server Computing Systems**	15	5
Optional Unit	**37 Architecture**	15	5
Optional Unit	**38 Database Management Systems**	15	5
Optional Unit	**39 E-Commerce & Strategy**	15	5
Optional Unit	**40 User Experience & Interface Design**	15	5
Optional Unit	**41 Analytic Architecture Design**	15	5
Optional Unit	**42 Risk Analysis & System Testing**	15	5
Optional Unit	**43 Internet of Things**	15	5
Optional Unit	**44 Robotics**	15	5
Optional Unit	**45 Emerging Technologies**	15	5
Optional Unit	**46 Virtual & Augmented Reality Development**	15	5
Optional Unit	**47 Games Development**	15	5
Optional Unit	**48 Systems Integration**	15	5
Optional Unit	**49 Operating Systems**	15	5

Pearson BTEC Level 5 Higher National Diploma in Computing (Data Analytics)		Unit credit	Level
Level 4 units:			
Core Unit *Mandatory*	**1 Programming**	15	4
Core Unit *Mandatory*	**2 Networking**	15	4
Core Unit *Mandatory*	**3 Professional Practice**	15	4
Core Unit *Mandatory*	**4 Database Design & Development**	15	4
Core Unit *Mandatory*	**5 Security**	15	4
Core Unit *Mandatory*	**6 Managing a Successful Computing Project (Pearson-set)**	15	4
Optional Unit	**Plus one Optional Level 4 unit (see below)**	15	4
Optional Unit	**Plus one Optional Level 4 unit (see below)**	15	4
Level 5 units:			
Core Unit *Mandatory*	**13 Computing Research Project (Pearson-set)**	30	5
Core Unit *Mandatory*	**14 Business Intelligence**	15	5
Specialist Unit *Mandatory*	**18 Discrete Maths**	15	5

Specialist Unit *Mandatory*	**21 Data Mining**	15	5
Specialist Unit *Mandatory*	**22 Applied Analytical Models**	15	5
Optional Unit	**Plus one Optional Level 5 unit (see below)**	15	5
Optional Unit	**Plus one Optional Level 5 unit (see below)**	15	5
Optional Unit Bank			
Optional units Level 4:			
Optional Unit	**7 Strategic Information Systems**	15	4
Optional Unit	**8 Computer Systems Architecture**	15	4
Optional Unit	**9 Software Development Lifecycles**	15	4
Optional Unit	**10 Website Design & Development**	15	4
Optional Unit	**11 Maths for Computing**	15	4
Optional Unit	**12 Data Analytics**	15	4
Optional units Level 5:			
Optional Unit	**17 Network Security**	15	5
Optional Unit	**19 Data Structures & Algorithms**	15	5
Optional Unit	**20 Advanced Programming**	15	5
Optional Unit	**23 Cryptography**	15	5
Optional Unit	**24 Forensics**	15	5
Optional Unit	**25 Information Security Management**	15	5
Optional Unit	**26 Machine Learning**	15	5

Optional Unit	**27 Artificial Intelligence**	15	5
Optional Unit	**28 Prototyping**	15	5
Optional Unit	**29 Application Program Interfaces**	15	5
Optional Unit	**30 Application Development**	15	5
Optional Unit	**31 Games Engine & Scripting**	15	5
Optional Unit	**32 Game Design Theory**	15	5
Optional Unit	**34 Systems Analysis & Design**	15	5
Optional Unit	**35 Network Management**	15	5
Optional Unit	**36 Client/Server Computing Systems**	15	5
Optional Unit	**37 Architecture**	15	5
Optional Unit	**38 Database Management Systems**	15	5
Optional Unit	**39 E-Commerce & Strategy**	15	5
Optional Unit	**40 User Experience & Interface Design**	15	5
Optional Unit	**41 Analytic Architecture Design**	15	5
Optional Unit	**42 Risk Analysis & System Testing**	15	5
Optional Unit	**43 Internet of Things**	15	5
Optional Unit	**44 Robotics**	15	5
Optional Unit	**45 Emerging Technologies**	15	5
Optional Unit	**46 Virtual & Augmented Reality Development**	15	5
Optional Unit	**47 Games Development**	15	5
Optional Unit	**48 Systems Integration**	15	5
Optional Unit	**49 Operating Systems**	15	5

Pearson BTEC Level 5 Higher National Diploma in Computing (Security)		Unit credit	Level
Level 4 units:			
Core Unit *Mandatory*	**1 Programming**	15	4
Core Unit *Mandatory*	**2 Networking**	15	4
Core Unit *Mandatory*	**3 Professional Practice**	15	4
Core Unit *Mandatory*	**4 Database Design & Development**	15	4
Core Unit *Mandatory*	**5 Security**	15	4
Core Unit *Mandatory*	**6 Managing a Successful Computing Project (Pearson-set)**	15	4
Optional Unit	**Plus one Optional Level 4 unit (see below)**	15	4
Optional Unit	**Plus one Optional Level 4 unit (see below)**	15	4
Level 5 units:			
Core Unit *Mandatory*	**13 Computing Research Project (Pearson-set)**	30	5
Core Unit *Mandatory*	**14 Business Intelligence**	15	5
Specialist Unit *Mandatory*	**23 Cryptography**	15	5
Specialist Unit *Mandatory*	**24 Forensics**	15	5

Specialist Unit *Mandatory*	**25 Information Security Management**	15	5
Optional Unit	**Plus one Optional Level 5 unit (see below)**	15	5
Optional Unit	**Plus one Optional Level 5 unit (see below)**	15	5
Optional Unit Bank			
Optional units Level 4:			
Optional Unit	**7 Strategic Information Systems**	15	4
Optional Unit	**8 Computer Systems Architecture**	15	4
Optional Unit	**9 Software Development Lifecycles**	15	4
Optional Unit	**10 Website Design & Development**	15	4
Optional Unit	**11 Maths for Computing**	15	4
Optional Unit	**12 Data Analytics**	15	4
Optional units Level 5:			
Optional Unit	**17 Network Security**	15	5
Optional Unit	**19 Data Structures & Algorithms**	15	5
Optional Unit	**20 Advanced Programming**	15	5
Optional Unit	**21 Data Mining**	15	5
Optional Unit	**22 Applied Analytical Models**	15	5
Optional Unit	**26 Machine Learning**	15	5
Optional Unit	**27 Artificial Intelligence**	15	5
Optional Unit	**28 Prototyping**	15	5
Optional Unit	**29 Application Program Interfaces**	15	5

Optional Unit	**30 Application Development**	15	5
Optional Unit	**31 Games Engine & Scripting**	15	5
Optional Unit	**32 Game Design Theory**	15	5
Optional Unit	**33 Analytical Methods**	15	5
Optional Unit	**34 Systems Analysis & Design**	15	5
Optional Unit	**35 Network Management**	15	5
Optional Unit	**36 Client/Server Computing Systems**	15	5
Optional Unit	**37 Architecture**	15	5
Optional Unit	**38 Database Management Systems**	15	5
Optional Unit	**39 E-Commerce & Strategy**	15	5
Optional Unit	**40 User Experience & Interface Design**	15	5
Optional Unit	**41 Analytic Architecture Design**	15	5
Optional Unit	**42 Risk Analysis & System Testing**	15	5
Optional Unit	**43 Internet of Things**	15	5
Optional Unit	**44 Robotics**	15	5
Optional Unit	**45 Emerging Technologies**	15	5
Optional Unit	**46 Virtual & Augmented Reality Development**	15	5
Optional Unit	**47 Games Development**	15	5
Optional Unit	**48 Systems Integration**	15	5
Optional Unit	**49 Operating Systems**	15	5

Pearson BTEC Level 5 Higher National Diploma in Computing (Intelligent Systems)		Unit credit	Level 4
Level 4 units:			
Core Unit *Mandatory*	**1 Programming**	15	4
Core Unit *Mandatory*	**2 Networking**	15	4
Core Unit *Mandatory*	**3 Professional Practice**	15	4
Core Unit *Mandatory*	**4 Database Design & Development**	15	4
Core Unit *Mandatory*	**5 Security**	15	4
Core Unit *Mandatory*	**6 Managing a Successful Computing Project (Pearson-set)**	15	4
Optional Unit	**Plus one Optional Level 4 unit (see below)**	15	4
Optional Unit	**Plus one Optional Level 4 unit (see below)**	15	4
Level 5 units:			
Core Unit *Mandatory*	**13 Computing Research Project (Pearson-set)**	30	5
Core Unit *Mandatory*	**14 Business Intelligence**	15	5
Specialist Unit *Mandatory*	**19 Data Structures & Algorithms**	15	5
Specialist Unit *Mandatory*	**26 Machine Learning**	15	5
Specialist Unit *Mandatory*	**27 Artificial Intelligence**	15	5

Optional Unit	**Plus one Optional Level 5 unit (see below)**	15	5
Optional Unit	**Plus one Optional Level 5 unit (see below)**	15	5
Optional Unit Bank			
Optional units Level 4:			
Optional Unit	**7 Strategic Information Systems**	15	4
Optional Unit	**8 Computer Systems Architecture**	15	4
Optional Unit	**9 Software Development Lifecycles**	15	4
Optional Unit	**10 Website Design & Development**	15	4
Optional Unit	**11 Maths for Computing**	15	4
Optional Unit	**12 Data Analytics**	15	4
Optional units Level 5:			
Optional Unit	**17 Network Security**	15	5
Optional Unit	**18 Discrete Maths**	15	5
Optional Unit	**20 Advanced Programming**	15	5
Optional Unit	**21 Data Mining**	15	5
Optional Unit	**22 Applied Analytical Models**	15	5
Optional Unit	**23 Cryptography**	15	5
Optional Unit	**24 Forensics**	15	5
Optional Unit	**25 Information Security Management**	15	5
Optional Unit	**28 Prototyping**	15	5
Optional Unit	**29 Application Program Interfaces**	15	5
Optional Unit	**30 Application Development**	15	5

Optional Unit	**31 Games Engine & Scripting**	15	5
Optional Unit	**32 Game Design Theory**	15	5
Optional Unit	**34 Systems Analysis & Design**	15	5
Optional Unit	**35 Network Management**	15	5
Optional Unit	**36 Client/Server Computing Systems**	15	5
Optional Unit	**37 Architecture**	15	5
Optional Unit	**38 Database Management Systems**	15	5
Optional Unit	**39 E-Commerce & Strategy**	15	5
Optional Unit	**40 User Experience & Interface Design**	15	5
Optional Unit	**41 Analytic Architecture Design**	15	5
Optional Unit	**42 Risk Analysis & System Testing**	15	5
Optional Unit	**43 Internet of Things**	15	5
Optional Unit	**44 Robotics**	15	5
Optional Unit	**45 Emerging Technologies**	15	5
Optional Unit	**46 Virtual & Augmented Reality Development**	15	5
Optional Unit	**47 Games Development**	15	5
Optional Unit	**48 Systems Integration**	15	5
Optional Unit	**49 Operating Systems**	15	5

Pearson BTEC Level 5 Higher National Diploma in Computing (Applications Development)		Unit credit	Level
Level 4 units:			
Core Unit *Mandatory*	**1 Programming**	15	4
Core Unit *Mandatory*	**2 Networking**	15	4
Core Unit *Mandatory*	**3 Professional Practice**	15	4
Core Unit *Mandatory*	**4 Database Design & Development**	15	4
Core Unit *Mandatory*	**5 Security**	15	4
Core Unit *Mandatory*	**6 Managing a Successful Computing Project (Pearson-set)**	15	4
Optional Unit	**Plus one Optional Level 4 unit (see below)**	15	4
Optional Unit	**Plus one Optional Level 4 unit (see below)**	15	4
Level 5 units:			
Core Unit *Mandatory*	**13 Computing Research Project (Pearson-set)**	30	5
Core Unit *Mandatory*	**14 Business Intelligence**	15	5
Specialist Unit *Mandatory*	**28 Prototyping**	15	5
Specialist Unit *Mandatory*	**29 Application Program Interfaces**	15	5
Specialist Unit *Mandatory*	**30 Application Development**	15	5

Optional Unit	**Plus one Optional Level 5 unit (see below)**	15	5
Optional Unit	**Plus one Optional Level 5 unit (see below)**	15	5
Optional Unit Bank			
Optional units Level 4:			
Optional Unit	**7 Strategic Information Systems**	15	4
Optional Unit	**8 Computer Systems Architecture**	15	4
Optional Unit	**9 Software Development Lifecycles**	15	4
Optional Unit	**10 Website Design & Development**	15	4
Optional Unit	**11 Maths for Computing**	15	4
Optional Unit	**12 Data Analytics**	15	4
Optional units Level 5:			
Optional Unit	**17 Network Security**	15	5
Optional Unit	**19 Data Structures & Algorithms**	15	5
Optional Unit	**20 Advanced Programming**	15	5
Optional Unit	**21 Data Mining**	15	5
Optional Unit	**22 Applied Analytical Models**	15	5
Optional Unit	**23 Cryptography**	15	5
Optional Unit	**24 Forensics**	15	5
Optional Unit	**25 Information Security Management**	15	5
Optional Unit	**26 Machine Learning**	15	5
Optional Unit	**27 Artificial Intelligence**	15	5
Optional Unit	**31 Games Engine & Scripting**	15	5

Optional Unit	**32 Game Design Theory**	15	5
Optional Unit	**33 Analytical Methods**	15	5
Optional Unit	**34 Systems Analysis & Design**	15	5
Optional Unit	**35 Network Management**	15	5
Optional Unit	**36 Client/Server Computing Systems**	15	5
Optional Unit	**37 Architecture**	15	5
Optional Unit	**38 Database Management Systems**	15	5
Optional Unit	**39 E-Commerce & Strategy**	15	5
Optional Unit	**40 User Experience & Interface Design**	15	5
Optional Unit	**41 Analytic Architecture Design**	15	5
Optional Unit	**42 Risk Analysis & System Testing**	15	5
Optional Unit	**43 Internet of Things**	15	5
Optional Unit	**44 Robotics**	15	5
Optional Unit	**45 Emerging Technologies**	15	5
Optional Unit	**46 Virtual & Augmented Reality Development**	15	5
Optional Unit	**47 Games Development**	15	5
Optional Unit	**48 Systems Integration**	15	5
Optional Unit	**49 Operating Systems**	15	5

Meeting local needs and centre devised units

Centres should note that the qualifications set out in these specifications have been developed in consultation with centres, employers, vendors and relevant professional organisations.

The units are designed to meet the skill needs of the sector and the specialist units allow coverage of the full range of employment within the sector. Centres should make maximum use of the choice available to them within the specialist pathways to meet the needs of their students, as well as the local skills and training needs.

Where centres identify a specific need that cannot be addressed using the units in this specification, centres can seek approval from Pearson to use units from other Pearson BTEC Higher National qualifications on the RQF (refer to the website or your Pearson regional contact for application details). Centres will need to justify the need for importing units from other Pearson BTEC Higher National RQF specifications. Meeting local need applications must be made in advance of delivery by 31 January in the year of registration.

The flexibility to import standard units from other BTEC Higher National RQF specifications is **limited to a maximum of 30 credits in a BTEC HNC qualification and a maximum of 60 credits in any BTEC HND qualification**. This is an overall maximum and centres should check the 'Rules of Combination' information for the specific qualification to confirm the actual requirements. These units cannot be used at the expense of the mandatory core units in any qualification nor can the qualification's rules of combination be compromised. The centre must ensure that approved units are used only in eligible combinations.

Alternatively centres can seek approval to use centre-devised units up to the advised maximum amounts for a BTEC HNC or a BTEC HND in the rules of combination to meet a specific need. The centre must provide a clear rationale on the progression benefits to students of taking the unit(s) that they are seeking approval for. Pearson will review the application and confirm or deny the request. The centre-devised units can be authored by the centre, subject to Pearson's scrutiny and approval process. Alternatively the centre may seek design and development of these units by Pearson. It is advisable that applications for approval of centre devised unit(s) are made one year **in advance** of the first year of centre-devised unit(s) delivery, to allow sufficient time for development, review and approval. The centre must not deliver and assess centre-devised units until they have been approved by Pearson.

4.3 Pearson-Set Assignments

At both Level 4 and Level 5, as part of the Core units, there are Pearson-set assignments. Each year, Pearson will issue a *Theme* and (for Level 4) a set of related *Topics.* Centres will develop an assignment, to be internally assessed, to engage students in work related to the Pearson-set Theme.

At Level 4, students will select a Topic to further define their approach to the Theme and assignment. At Level 5, it is expected that students will define their own Topic, in negotiation with tutors, based on the Pearson-set Theme.

For example, from the Higher Nationals in Business:

- Theme: "Corporate Social Responsibility (CSR) and its importance for sustainability and competitive advantage"

Level 4 Topics:

- How to start up a socially responsible company
- The impact of CSR on a functional area (e.g. HR, Marketing, Finance) within an organisation to promote profitability and financial sustainability.
- Implementing CSR activities within organisations to meet sustainability objectives.

Centres can find relevant support in the sample assessment material for the units, and the Theme and Topic release documentation, which will be provided for each level.

The aim of the Pearson-set assignments is to provide a common framework for centres to develop work that will allow cross-sector benchmarking, through the standardisation of student work, and identification and sharing of 'best practice' in higher education teaching and learning. Pearson will share the 'best practice' results with all centres. For further information about Pearson-set assignments and assessment, see section 6.0 Assessement of this document.

4.4 Unit descriptor example

This is how we refer to the individual units of study that make up a Higher National qualification. Students will study and complete the units included in the programme offered at your centre.

The unit title tells your students what the unit is about - in this case Database Design & Development. At level 4 they can expect to achieve a complete grounding in the subject and the knowledge and skills required to continue their studies in the subject at level 5.

Unit 4: Database Design & Development

Unit code	H/615/1622
Unit type	Core
Unit level	4
Credit value	15

Introduction

Organisations depend on their databases to provide information essential for their day-to-d operations and to help them take advantage of today's rapidly growing and maturing e-com opportunities. An understanding of database tools and technologies is an essential skill for designing and developing systems to support them.

Database systems continue to demand more complex data structures and interfaces, as applications get increasingly sophisticated. Most organisations collect and store large volum data, either on their own systems or in the cloud, and this data is used not just for the operational running of their business but also mined for other more intelligent and complex applications. Databases stand as the back-end of most systems used by organisations for their operation

Database design and development is a fundamental and highly beneficial skill for computin students to master, regardless of their specialism.

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

Topics included in this unit are: examination of different design tools and techniques; exam of different development software options; considering the development features of a fully functional robust solution covering data integrity, data validation, data consistency, data se and advanced database querying facilities across multiple tables; appropriate user interface databases and for other externally linked systems; creating complex reports/dashboards, t the system against the user and system requirements; and elements of complete system documentation.

On successful completion of this unit students will be able to use appropriate tools to design and develop a relational database system for a substantial problem. They will be able to test the system to ensure it meets user and system requirements and fully document the system by providing technical and user documentation. For practical purposes, this unit covers relational databases and related tools and techniques. A brief overview of object-oriented databases will also be covered.

Students will develop skills such as communication literacy, critical thinking, analysis, reasoning and interpretation, which are crucial for gaining employment and developing academic competence.

Learning Outcomes

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

LO1. Use an appropriate design tool to design a relational database problem.

LO2. Develop a fully functional relational database system, based on an existing system design.

LO3. Test the system against user and system requirements.

LO4. Produce technical and user documentation.

There are three unit types: Core units (which students have to complete to achieve either the Level 4 Certificate or Level 5 Diploma; Specialist units (which students have to complete when studying one of the specialist pathways) and Optional units, which can be chosen. Core units are identified in the unit descriptor, for details of Optional & Specialist units see Section 4.2 'Programme Structures'

All Higher National Certificate units are at level 4. All Higher National Diploma units are at level 5.

The credit value is 15 in most units and 30 in some. To complete a Higher National Certificate or Diploma students are expected to achieve the appropriate number of credits.

Some notes on the unit, giving your students an idea of what they can expect to study, and why the unit is likely to be of interest to them.

There are usually four Learning Outcomes for each unit (and sometimes three). The Learning Outcomes are what students are able to do by the time they complete the unit.

This section covers the content that students can expect to study as they work towards achieving their Learning Outcomes.

Essential Content

LO1 **Use an appropriate design tool to design a relational database system for a substantial problem**

The role of database systems e.g. as back-end systems, in e-commerce, for data mining applications etc.

Determining user and system requirements.

Design tools and techniques for a relational database system.

Logical design for relational databases e.g. tables, data elements, data types, indexes, primary/foreign keys, entity relationship modelling, referential integrity, data normalisation to third normal form.

Designs for data integrity, data validations, data security and data controls.

User interface design.

Output designs for user requirements.

Overview of object-oriented databases and their design tools.

LO2 **Develop a fully functional relational database system, based on an existing system design**

Consideration of database and platform options for system development.

Examination of different software development options for developing the relational database system.

Implementation of the physical data model based on the logical model.

Data stores, internal storage and external storage (e.g. the cloud).

Implementation of security elements in databases.

Relational databases with controls like data validation using; input masks, drop down lists, option buttons.

User interface for requirements, functionality, reliability, consistency and performance.

Consideration of interface links with other systems e.g. internet-based applications.

Data manipulation using appropriate query tools, including complex queries to query across multiple tables, and using functions and formulae.

Database maintenance and data manipulation: inserts, updates, amendments, deletions, data backup and recovery.

System reports using report writing tools and report generators, dashboards.

LO3 **Test the system against user and system requirements**

Identify elements of the system that need to be tested.

Consider data that should be used to fully test the system.

Match tests against user and system requirements.

Test procedures to be used: test plans, test models e.g. white box, black box; testing documentation.

Functional and system testing and testing the robustness of the system, including help menus, pop-ups, hot-spots, data validation checks.

LO4 **Produce technical and user documentation**

Technical and user documentation and their contents.

When assignments are graded the tutor will refer to this table, which connects the unit's Learning Outcomes with the student's work. The assignment may be graded at 'Pass', 'Merit' or 'Distinction' level, depending on the quality of the student's work.

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Use an appropriate design tool to design a relational database system for a substantial problem		**D1** Assess the effectiveness of the design in relation to user and system requirements.
P1 Design a relational database system using appropriate design tools and techniques, containing at least four interrelated tables, with clear statements of user and system requirements.	**M1** Produce a comprehensive design for a fully functional system which includes interface and output designs, data validations and data normalisation.	
LO2 Develop a fully functional relational database system, based on an existing system design		**LO2 & 3** **D2** Evaluate the effectiveness of the database solution in relation to user and system requirements, and suggest improvements.
P2 Develop the database system with evidence of user interface, output and data validations, and querying across multiple tables. **P3** Implement a query language into the relational database system.	**M2** Implement a fully functional database system which includes system security and database maintenance. **M3** Assess whether meaningful data has been extracted through the use of query tools to produce appropriate management information.	
LO3 Test the system against user and system requirements		
P4 Test the system against user and system requirements.	**M4** Assess the effectiveness of the testing, including an explanation of the choice of test data used.	
LO4 Produce technical and user documentation		**D3** Assess any future improvements that may be required to ensure the continued effectiveness of the database system.
P5 Produce technical and user documentation.	**M5** Produce technical and user documentation for a fully functional system, including diagrams showing movement of data through the system, and flowcharts describing how the system works.	

Recommended books, articles and online material that support learning. The programme tutor may suggest alternatives and additions, usually with a local application or relevance.

Recommended Resources

Textbooks

Churcher, C. (2012) Beginning Database Design: From Novice to Professional. 2nd Ed. Apress.

Connolly, T. and Begg, C. (2014) Database Systems: A Practical Approach to Design, Implementation and Management. 6th Ed. Global Edition. Pearson.

Kroemke, D. and Auer, D. (2012) Database Concepts: International Edition. 6th Ed. Pearson.

Paulraj, P (2008). Database Design and Development: An Essential Guide for IT Professional. Wiley.

Stephens, R. (2008) Beginning Database Design Solutions. Wrox.

Journals

International Journal of Database Management Systems

Journal of Database Management

The Computer Journal

Journal of Systems Analysis and Software Engineering

Journal of Emerging Trends in Computing and Information Sciences

Websites

www.lynda.com	Database Training (Tutorials)
mva.microsoft.com	Microsoft Virtual Academy "Database Development" (Training)
mva.microsoft.com/ebooks	Microsoft Virtual Academy "Microsoft Press" (E-Books)

Links

This unit links to the following related units:

Unit 7: Strategic Information Systems

Unit 38: Database Management Systems

Website-based resources – referencing

Some units have website links as part of their recommended resources lists. Hyperlinking to these resources directly can be problematic as locations and addresses of resources can change over time. To combat this we have referenced website-based resources as follows:

1 A link to the main page of the website

2 The title of the site

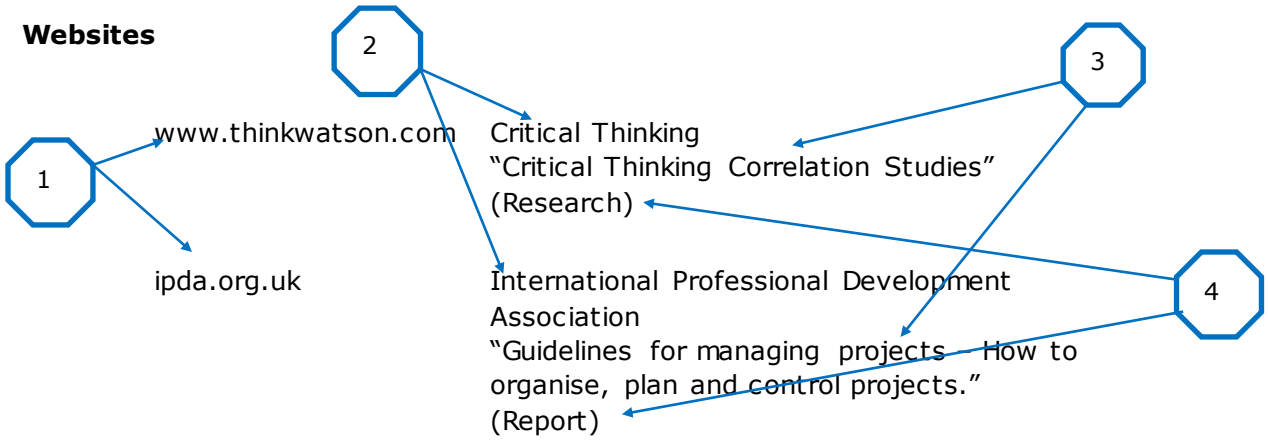
3 The name of the section or element of the website where the resource can be found

4 The type of resource it is. This will be one of the following:

- Research
- General Reference
- Tutorials
- Training
- E-Books
- Report
- Wiki
- Article
- Data sets
- Development Tool
- Discussion Forum.

Some examples from computing units have been shown below:

Websites



4.5 Professional Body exemptions

In redeveloping the Pearson BTEC Higher National qualifications in Computing, we have worked closely with the following professional bodies:

- British Computing Society (BCS)
- The Institution of Engineering & Technology (IET).

The BCS represents IT professionals both in the UK and internationally and are a member organisation of CEPIS (Council of European Professional Informatics Societies). The BCS have mapped their membership schemes to the SFIA framework.

With their agreement we have secured exemptions from certain memberships for students achieving Pearson BTEC Higher National qualifications in Computing. Members of the BCS can join various Specialist Groups within the Society. Specialist Groups give BCS members the opportunity to keep up to date on all sector relevant topics. Specialist Group meetings give members the opportunity to complement existing knowledge, contribute towards Continuing Professional Development (CPD), and build exposure to both people in and information on various computing fields. The BCS has 50+ Specialist Groups. Details of BCS membership and Specialist Groups can be found in Appendix 1.

Offering membership to the BCS adds value to the qualification by offering students access to CPD.

4.6 Vendor Accreditation

In redeveloping the Pearson BTEC Higher National qualifications in Computing, we have worked closely with vendors to offer students the skills required to gain accredited certifications. Certifications from the following vendors will be available:

- CompTIA
- CISCO
- Microsoft
- Oracle
- AXELOS

Students will not automatically gain vendor accredited certificates as a result of studying a BTEC HNC and/or a BTEC HND.

The skills required to achieve a vendor accredited certificate have been included in specific units (see *Appendix 2* for unit combination details). Once these units have been completed a student can then put themselves forward for vendor accreditation via the vendor-specific route. Details of these routes are available below.

CompTIA's vendor-neutral certifications are the starting point for a career in IT. They show employers you have the skills to do the job, regardless of the vendor hardware or software. Earning a CompTIA certification proves you have the right skills, and is the starting place for a career in IT.

- CompTIA A+: validates understanding of the most common hardware and software technologies and certifies the skills necessary to support complex IT infrastructures.
- Network+: validates the essential knowledge and skills needed to confidently design, configure, manage and troubleshoot any wired and wireless networks.
- CompTIA Security+: validates foundational, vendor-neutral IT security knowledge and skills. Covers the essential principles for Network Security and risk management.
- CompTIA Cloud+: validates the skills and expertise of IT practitioners in implementing and maintaining cloud technologies.
- CompTIA Server+: validates planning, securing and maintaining a variety of server equipment.
- CompTIA Linux+: certifies foundational skills and knowledge of Linux.

Details of how to take CompTIA Certification exams can be found on the Pearson Vue website (http://www.pearsonvue.com/comptia/).

CISCO is the largest networking company in the world and sponsor IT Professional certifications for CISCO products. CISCO Certifications and specialist qualifications are an IT industry standard used to validate knowledge of CISCO products and technologies. Getting certified brings measurable rewards and opens up further professional opportunities.

- CISCO IT Essentials: covers fundamental computer and career skills for entry-level IT jobs.
- CISCO CCNA Routing & Switching: covers knowledge of foundational technologies and skill sets needed for the adoption of next generation networking technologies.
- CISCO CCNA Security: covers skills required to develop a security infrastructure, recognise threats and vulnerabilities to networks, and mitigate security threats.

For students to be in a position to achieve CISCO accredited certification the relevant units must be delivered using CISCO technologies.

Students who study these units with non-CISCO technologies will achieve a BTEC Higher National Diploma, but will not have the skills necessary to take CISCO Certification assessments.

Details of how to take CISCO Certification exams can be found on the Pearson Vue website (http://www.pearsonvue.com/cisco/).

Microsoft Office is a bundled set of applications which includes Microsoft Word, Microsoft Excel, and Microsoft PowerPoint. A Microsoft Certification validates your expertise in Microsoft technology. Passing your first Microsoft Certification exam automatically makes you a member of the Microsoft Certified Professional (MCP) community, with access to all of the benefits provided through the MCP.

- Microsoft Office Specialist: allows you demonstrate the skills needed to get the most out of Microsoft Office.

Details of how to take the various Microsoft Office exams can be found on the Microsoft learning website (https://www.microsoft.com/en-us/learning/).

Oracle is a leading database software company and has developed technologies into the entire technology stack. The Oracle Certification Program certifies candidates on skills and knowledge related to Oracle products and technologies.

- Java SE 8 Fundamentals: validates skills in object-oriented programming using the Java language.
- Oracle Database Introduction to SQL: validates skills in the SQL programming language.
- Oracle Database 12c Administration: validates understanding of the Oracle Database architecture.

For students to be in a position to achieve Oracle accredited certification the relevant units must be delivered using Java and/or SQL.

Students who study these units with non-Oracle technologies will achieve a BTEC Higher National Diploma, but will not have the skills necessary to take Oracle's certification assessments.

Details of how to take Oracle Certification exams are available on the Pearson Vue website (http://www.pearsonvue.com/oracle/).

AXELOS is a joint venture set up by the Government of the UK and Capita, to develop, manage and operate qualifications in best practice methodologies.

- Prince 2 Foundation Qualification: confirms sufficient knowledge and understanding of the PRINCE2 method to be able to work effectively with, or as a member of, a project management team.
- RESILIA Foundation Qualification: verifies understanding of how decisions impact good/bad cyber resilience.

Details of how to take the various exams are available in the links below:

- Prince 2 Foundation (http://www.axelos.com/certifications/).
- RESILIA Foundation (https://www.axelos.com/certifications/).

See *Appendix 2* for an outline of the unit combinations students must take to be in a position to gain the relevant vendor certifications.

5. Teaching and learning

The aim of this section is to provide guidance to centres so that they can engage students in a dynamic, interactive and reflective learning experience. This experience should effectively prepare students to successfully engage in the assessments, which will measure depth, as well as breadth, of knowledge. Teaching should stimulate academic engagement, develop challenging yet constructive discourse and encourage students to reflect on their own performance in preparation for a professional career. Additionally, centres are encouraged to expose students to autonomous and independent learning, which will facilitate the development of their academic skills, experiences and techniques required as they progress from one level of study to the next.

Centres are encouraged to develop programmes that have a distinctive focus on entry into work, delivering a curriculum that embeds employability, has a strong commitment to ethics and diversity, and introduces students to contemporary as well as seminal research. All teaching and learning should reflect the expectations of employers and society, and be informed and guided by external benchmarks such as professional and statutory bodies. In so doing students completing a Pearson BTEC Higher National qualification in Computing will have the attributes, skills, principles and behaviours that will enable them to make a valuable contribution to local, national and international commerce.

The contributions students make to their own experiences, alongside the experience of their peers, is invaluable. Student engagement and the student voice should form a significant aspect of a student's life. Centres are encouraged to gather student opinions on a range of teaching and learning matters, which would be used to inform and enhance future practice within a programme of study and within a centre.

5.1 Delivering quality and depth

A high quality teaching and learning experience should include qualified and experienced tutors, an interactive and engaging curriculum, motivated and inspired students, and a support system that caters for the pastoral as well as academic interests of students.

In addition to delivering a quality learning experience, centres must also encourage students to have a deeper understanding of the subject where they are able to go beyond the fundamentals of explaining and describing. Students are expected to show they can analyse data and information, make sense of this and then reach evaluative judgements. At the higher levels of study there is an expectation that students will be able to apply a degree of criticality to their synthesis of knowledge. This criticality would come from exposure to appropriate and relevant theories, concepts and models.

One of the reasons for delivering a quality learning experience, which has depth as well as breadth, is the benchmarking of the qualification to the Framework for Higher Education Qualifications (FHEQ). It also meets requirements set by the Regulated Qualifications Framework (RQF). The first stage of a Pearson BTEC Higher National in Computing is the BTEC Higher National Certificate (HNC), which is aligned with Level 4 of both frameworks; with the BTEC Higher National Diploma (HND) aligned with Level 5. This means that the HNC has the same level of demand and expectations as the first year of a degree programme, with the HND having the same level of demand and expectations as the second year of a degree programme.

Centres are expected to provide a broadly similar experience for students to that which they would have if they attended a similar programme at a university. This could mean:

- Providing access to library facilities which has, as a minimum, available copies (physically and/or electronically) of all required reading material
- Access to research papers and journals
- Utilising a Virtual Learning Environment (VLE) to support teaching and learning
- Working with local employers (see below) to present real-life case studies
- Creating schemes of work that embrace a range of teaching and learning techniques
- Listening to the student voice.

Irrespective of the type of programme on which a student is enrolled, it is highly advisable that students are inducted onto their BTEC Higher National programme. This induction should include an introduction to the course programme and academic study skills that will be essential in supporting their research and studies, and, therefore, enhance the learning experience.

An induction programme should consist of the following:

- Course programme overview
- Preparing for lessons
- Effective engagement in lectures and seminars
- Making the most out of their tutor
- Assignment requirements
- Referencing and plagiarism
- Centre policies
- Academic study skills.

Pearson offer Higher National Global Study Skills to all students– an online toolkit that supports the delivery, assessment and quality assurance of BTECs in centres. This is available on the HN Global website www.highernationals.com. HN Global provides a wealth of support to ensure that tutors and students have the best possible experience during their course. With HN Global, students can converse with other students from around the world, find useful training on how to prepare for their studies and get access to comprehensive online career services.

5.2 Engaging with employers

Just as the student voice is important, so too is the employer's. Employers play a significant role in the design and development of all regulated qualifications, including the Pearson BTEC Higher Nationals in Computing. This input should extend into the learning experience, where engagement with employers will add value to students, particularly in transferring theory into practice.

Centres should consider a range of employer engagement activities. These could include:

- Field trips to local businesses
- Inviting members of the local computing community to present guest lectures

- Using employers to judge the quality of assessed presentations and/or products
- Coding Challenges set by local employer.

While detailed guidance on assessment has been provided in this specification (see Section 6), it is worth considering the involvement of employers when determining assessment strategies and the use of different assessment vehicles. This enables centres to design assessments that are more closely related to what students would be doing in the workplace. Employers are able to comment on relevance and content, as well as the challenge presented by an assessment. Notwithstanding this, ultimately it is the centre's responsibility to judge the extent to which any employer contributes to teaching and learning.

5.3 Engaging with students

Students are integral to teaching and learning. As such it is important that they are involved as much as possible with most aspects of the programme on to which they are enrolled. This input could include taking into account their views on how teaching and learning will take place, their role in helping to design a curriculum, or on the assessment strategy that will test their knowledge and understanding.

There are many ways in which to capture the student voice and student feedback, both formal and informal. Formal mechanisms include the nomination of student representatives to act as the collective student voice for each student cohort, student representation at course team meetings, and an elected higher education representative as part of the Student Union. Student forums should also take place periodically throughout the year with minutes and action plans updated and informing the overall annual course monitoring process. Unit specific feedback can also be collated by students completing unit feedback forms, end of year course evaluations, and scheduled performance review meetings with their tutor.

However, this should not be the only time when feedback from students is sought. Discourse with students should be constant, whereby teachers adopt a 'reflection on action' approach to adjust teaching, so that students are presented with an environment that is most supportive of their learning needs. Just as employers could have an input into assessment design, so too could students. This will support the development of assignments that are exciting and dynamic, and fully engage students in meaningful and informative assessment.

The biggest advantage of consulting students on their teaching, learning and assessment is securing their engagement in their own learning. Students are likely to feel empowered and develop a sense of ownership of all matters related to teaching, learning and assessment, not just their own experiences. Students could also view themselves as more accountable to their tutors, ideally seeing themselves as partners in their own learning and not just part of a process.

5.4 Planning and structuring a programme

Learning should be challenging yet exciting; teaching should be motivating and inspirational. Consequently, both teaching and learning should form part of a programme structure that is active, flexible and progressive, and has an industry focus wherever possible.

It is important for a programme structure to be effectively planned, taking into account the nature of the student cohort, the primary mode of delivery (face-to-face or distance learning) and the level of study. It is also advisable to consider the student voice (whether that voice is heard through end of programme feedback, or through ongoing dialogue) when planning how and when students will be exposed to a particular subject. One other vital source of information that centres would do well to embrace is the feedback from tutors who have been and/or will be delivering learning.

It is recommended that centres establish a programme planning forum where various stakeholders are represented. This forum could consider different perspectives of teaching and learning and how these are planned into an effective programme structure. Consideration could be given to, for example, the holistic and consistent use of Virtual Learning Environments (VLEs), a programme of field trips, a strategy for engaging with employers, and how and when to assess learning.

Consideration should be given to a number of factors when planning a programme structure. These include:

- The sequencing of units
- Whether to have condensed or expanded delivery
- Teaching and learning techniques.

5.4.1 Sequencing units

The level of demand embedded within a unit is benchmarked to recognised standards. This applies to all units within a level of study, and this means that all Level 4 units have similar demands, as do all Level 5 units. However, this does not mean that units can, or should, be delivered in any order. For example, in the BTEC Higher National Diploma in Computing Level 4 units are delivered, and achieved, by students before progression to Level 5. However, students are able to progress to Level 5 with a minimum of 90 credits at Level 4.

Within each level it is advisable to sequence units so that those providing fundamental knowledge and understanding are scheduled early in the programme. It may also be advisable to schedule the assessment of units requiring the practice and application of more advanced skills later in the programme.

5.4.2 Condensed and expanded delivery

The next consideration is whether to deliver a unit in a condensed format alongside other units, or to deliver units over an extended period. The following tables provide examples of this, based on four units being delivered in one teaching block.

Condensed version:

Weeks 1 to 6	**Week 7**	**Weeks 8 to 13**	**Week 14**
Unit 1	Assessment	Unit 3	Assessment
Unit 2		Unit 4	

Expanded version:

Weeks 1 to 12	**Weeks 13 and 14**
Unit 1	Assessment
Unit 2	
Unit 3	
Unit 4	

The decision to deliver a condensed or expanded programme would depend on a number of factors, including availability of resources, the subjects to be taught and the requirements of students. Both versions have their advantages: the condensed version would provide an opportunity for students to gain early success and achievement. This will enhance their self-efficacy, the sense of one's belief in one's ability to succeed, and self-confidence, with tutors being able to identify and respond to less able students early in the teaching and learning cycle. The advantages of the expanded version include providing a longer timescale for students to absorb new knowledge and therefore, potentially, improve success, and giving tutors an opportunity to coach and support less able students over a longer period of time.

As there are pros and cons to both approaches, the use of a planning forum would help to ensure the most appropriate approach is taken. For example, centres could choose to deliver the first teaching block using the expanded version, with the subsequent teaching block being delivered through a condensed approach.

It should be noted that the above consideration would apply equally to programmes that are being delivered face-to-face or through distance learning.

5.4.3 Drawing on a wide range of delivery techniques

As part of planning the range of techniques that will be used to deliver the syllabus, centres should also consider an appropriate combination of techniques for the subject.

The table below lists some of the techniques that centres could introduce into a planned programme structure.

Technique	Face-to-face	Distance learning
Lectures and seminars	These are the most common techniques used by tutors. They offer an opportunity to engage with a large number of students, where the focus is on sharing knowledge through the use of presentations.	Delivery would be through video conferencing and/or pre-recorded audio and/or visual material, available through an online platform. Synchronous discussion forums could also be used.
Workshops	These are used to build on knowledge shared via tutors and seminars. Teaching can be more in-depth where knowledge is applied, for example to case studies or real-life examples. Workshops could be student-led, where students present, for example, findings from independent study.	While more challenging to organise than for face-to-face delivery, workshops should not be dismissed. Smaller groups of three or four students could access a forum simultaneously and engage in the same type of activity as for face-to-face.
Tutorials	These present an opportunity for focused one-to-one support, where teaching is led by an individual student's requirements. These can be most effective in the run up to assessment, where tutors can provide more focused direction, perhaps based on a formative assessment.	Other than not necessarily being in the same room as a student, tutors could still provide effective tutorials. Video conferencing tools provide the means to see a student, which makes any conversation more personal.
Virtual Learning Environments (VLEs)	These are invaluable to students studying on a face-to-face programme. Used effectively, VLEs not only provide a repository for taught material such as presentation slides or hand-outs, but could be used to set formative tasks such as quizzes. Further reading could also be located on a VLE, along with a copy of the programme documents, such as the handbook and assessment timetable.	Where students are engaged with online delivery through distance or blended learning a VLE is a must, as this would be the primary or the key source of learning. Where distance learning is primarily delivered through hard copies of workbooks, etc., the same principle would apply as for face-to-face learning.

Technique	Face-to-face	Distance learning
Blended learning	The combination of traditional face-to-face learning and online learning. This can enable the students to gain personalised support, instruction and guidance while completing assigned activities and tasks remotely.	Offline learning enables students to develop autonomy and self-discipline by completing set activities and tasks with limited direction and traditional classroom-based constraints.
Work-based learning	Any opportunity to integrate work-based learning into a curriculum should be taken. This adds realism and provides students with an opportunity to link theory to practice in a way in which case studies do not. Many full-time students are involved in some form of employment, either paid or voluntary, which could be used, where appropriate, as part of their learning, for example when assignments require students to contextualise a response to a real organisation.	It is likely that the majority of distance learning students would be employed and possibly classed as mature students. Bringing theory to life through a curriculum, which requires work-based application of knowledge, would make learning for these students more relevant and meaningful. Perhaps more importantly, assessment should be grounded in a student's place of work, wherever possible.
Guest speakers	These could be experts from industry or visiting academics in the subject area that is being studied. They could be used to present a lecture/seminar, a workshop or to contribute to assessment. The objective is to make the most effective use of an expert's knowledge and skill by adding value to the teaching and learning experience.	As long as the expert has access to the same platform as the students then the value added contribution would still be very high. Consideration would need to be given to timings and logistics, but with some innovative management this technique would still have a place in distance learning programmes.
Field trips	Effectively planned field trips, which have a direct relevance to the syllabus, will add value to the learning experience. Through these trips students can relate theory to practice, have an opportunity to experience organisations in action, and potentially open their minds to career routes.	The use of field trips can be included as part of a distance learning programme. They will add the same value and require the same planning. One additional benefit of field trips for distance learning is that they provide an opportunity for all students in a cohort to meet, which is a rare occurrence for distance learning students.

5.4.4 Assessment considerations

Centres should design assessment for learning. This is where an assessment strategy requires students to engage with a variety of assessment tools that are accessible, appropriately challenging, and support the development of student self-efficacy and self-confidence. To ensure that assignments are valid and reliable, centres must implement robust quality assurance measures and monitor the effectiveness of their implementation (see Section 6 of this Programme Specification). This includes ensuring that all students engage in assessment positively and honestly.

Assessment also provides a learning opportunity for all stakeholders of the assessment to have access to feedback that is both individual to each student and holistic to the cohort. Feedback to students should be supportive and constructive. Student self-efficacy (and therefore self-confidence) can be significantly enhanced where feedback not only focuses on areas for improvement, but recognises the strengths a student has. At the cohort level, similar trends could be identified that inform future approaches to assessments and teaching. Assessment is an integral part of the overall learning process and assessment strategy must be developed to support effective, reflective, thinking computing practitioners for the future. Assessment can be either formative, summative or both.

5.4.5 Formative assessment

Formative assessment is primarily developmental in nature and designed to give feedback to students on their performance and progress. Assessment designed formatively should develop and consolidate knowledge, understanding, skills and competencies. It is a key part of the learning process and can enhance learning and contribute to raising standards.

Through formative assessment tutors can identify students' differing learning needs early on in the programme and so make timely corrective interventions. Tutors can also reflect on the results of formative assessment to measure how effective the planned teaching and learning is at delivering the syllabus. Each student should receive one set of written formative feedback, otherwise some students may feel that others are being given more than their share of verbal feedback.

5.4.6 Summative assessment

Summative assessment is where students are provided with the assignment grades contributing towards the overall unit grade. For summative assessment to be effective it should also give students additional formative feedback to support ongoing development and improvement in subsequent assignments. All formative assessment feeds directly into the summative assessment for each unit and lays the foundations from which students develop the necessary knowledge and skills required for the summative assessment.

5.4.7 Assessment feedback

Effective assessment feedback is part of continuous guided learning which promotes learning and enables improvement. It also allows students to reflect on their performance and helps them understand how to make effective use of feedback. Constructive and useful feedback should enable students to understand the strengths and limitations of their performance, providing positive comments where possible as well as explicit comments on how improvements can be made. Feedback should reflect the Learning Outcomes and marking criteria to also help students understand how these inform the process of judging the overall grade.

The timing of the provision of feedback and of the returned assessed work also contributes to making feedback effective. Specific turnaround time for feedback should be agreed and communicated with both tutors and students. Timing should allow students the opportunity to reflect on the feedback and consider how to make use of it in forthcoming assessments, taking into account the tutor's workload and ability to provide effective feedback.

5.4.8 Designing valid and reliable assessments

To help ensure valid and reliable assignments are designed and are consistent across all units, centres could consider a number of actions.

Use of language

The first aspect of an assignment that a centre could focus on is ensuring that language makes tasks/questions more accessible to students.

Due consideration must be given to the command verbs (i.e. the verbs used in unit assessment criteria) when considering the Learning Outcomes of a unit. Assignments must use appropriate command verbs that equate to the demand of the Learning Outcome. If the outcome requires 'analysis' then 'evaluative' requirements within the assignment must not be set when testing that outcome. This would be viewed as over-assessing. Similarly, it is possible to under-assess where analytical demands are tested using, for example, explanatory command verbs.

The following can be used as a guide to support assignment design:

- Ensure there is a holistic understanding (by tutors and students) and use of command verbs.
- Set assignment briefs that use a single command verb, focusing on the highest level of demand expected for the Learning Outcome(s) that is (are) being tested.
- Assignments should be supported by additional guidance that helps students to interpret the demand of the assessment criteria.
- Time-constrained assessments should utilise the full range of command verbs (or acceptable equivalents) appropriate to the academic level. Modes of time-constrained assessments include in-class tests and exams that could be both open- or closed-book. Centres should pay close consideration to ensuring tests and exams are not replicated during the course of the year.

Consistency

This relates to the consistency of presentation and structure, the consistent use of appropriate assessment language, and the consistent application of grading criteria. Where assignments are consistent, reliability is enhanced. Where validity is present in assignments this will result in assignments that are fit for purpose and provide a fair and equitable opportunity for all students to engage with the assignment requirements.

Employing a range of assessment tools

Just as variation in teaching methods used is important to the planning of a programme structure, so too is the use of a range of assessment tools appropriate to the unit and its content. Centres should consider taking a holistic view of assessment, ensuring a balanced assessment approach with consideration given to the subject being tested and what is in the best interests of students. As mentioned above, consultation with employers could add a sense of realism to an assessment strategy. (A comprehensive list of assessment tools is provided in section 6.2 *Setting effective assessments.*)

No matter what tool is used, assignments should have a sector focus (whether this is in a workplace context or through a case study), and be explicitly clear in its instructions. In the absence of a case study a scenario should be used to provide some context. Finally, students should be clear on the purpose of the assignment and which elements of the unit it is targeting.

6. Assessment

BTEC Higher Nationals in Computing are assessed using a combination of internally assessed **centre-devised internal assignments** (which are set and marked by centres) and internally assessed **Pearson-set assignments** (which are set by Pearson and marked by centres). Pearson-set assignments are mandatory and target particular industry-specific skills. The number and value of these units are dependent on qualification size:

- For the HNC
  - one core 15 credit unit at Level 4 will be assessed by a mandatory Pearson-set assignment.
- For the HND
  - two core units: one core 15 credit unit at Level 4 and one core 30 credit unit at Level 5, will be assessed by a mandatory Pearson-set assignment.

All other units in both qualifications are assessed by centre-devised internal assignments.

The purpose and rationale of having Pearson-set units on Higher Nationals is as follows:

- **Standardisation of student work** – Assessing the quality of student work, that it is meeting the level and the requirements of the unit across all centres, that grade decisions and assessor feedback are justified and that internal verification and moderation processes are picking up any discrepancies and issues. The Pearson-set units will be included in the annual sampling of units by the External Examiner.
- **Sharing of good practice** - We will share good practice in relation to themes such as innovative approaches to delivery, the use of digital literacy, enhancement of student employability skills and employer engagement. **These themes will align to those for QAA Higher Education Reviews**.

An appointed External Examiner (EE) for the centre will sample the Pearson-set units as part of the annual Pearson EE centre visit. The focus will be on both standardisation of student assessed work and sharing of good practice with all EE feedback collated and presented in one External Examiner report for each of the units at the end of the year. This will support centres in developing effective assessment strategies, building on good practice and learning from one another.

In developing an overall plan for delivery and assessment for the programme, you will need to consider the order in which you deliver units, whether delivery will take place over short or long periods of time, and when assessment can take place. It is also advisable to plan for the Pearson set units according to the specific unit requirements and the delivery guidance provided in the Sample Assessment Materials.

Sample Assessment Materials

Each unit has supporting Sample Assessment Materials (SAMs) that are available to download from the course materials section on our website (http://qualifications.pearson.com/). The SAMs are there to give you an example of what the assessment will look like in terms of the feel and level of demand of the assessment.

The SAMs, with the exception of the mandatory Pearson-set unit, provide tutors with suggested types of assignment and structure that can be adopted or adapted accordingly.

6.1 Principles of internal assessment

This section gives an overview of the key features of internal assessment and how you, as an approved centre, can offer it effectively. The full requirements and operational information are given in the Pearson Quality Assurance Handbook available in the support section of our website (http://qualifications.pearson.com/). All the assessment team will need to refer to this document.

For Pearson BTEC Higher Nationals it is important that you can meet the expectations of stakeholders and the needs of students by providing a programme that is practical and applied. Centres can tailor programmes to meet local needs and should use links with local employers and the wider computing sector.

When internal assessment is operated effectively it is challenging, engaging, practical and up to date. It must also be fair to all students and meet national standards.

Assessment through assignments

For internally assessed units the format of assessment is an assignment taken after the content of the unit, or part of the unit if several assignments are used, has been fully delivered. An assignment may take a variety of forms, including practical and written types. An assignment is a distinct activity completed independently by students (either alone or in a team). An assignment is separate from teaching, practice, exploration and other activities that students complete with direction from and, formative assessment by, tutors.

An assignment is issued to students as an **assignment brief** with a hand-out date, a completion date and clear requirements for the evidence that students are expected to provide. There may be specific observed practical components during the assignment period. Assignments can be divided into separate parts and may require several forms of evidence. A valid assignment will enable a clear and formal assessment outcome based on the assessment criteria.

Assessment decisions through applying unit-based criteria

Assessment decisions for Pearson BTEC Higher Nationals are based on the specific criteria given in each unit and set at each grade level. The criteria for each unit have been defined according to a framework to ensure that standards are consistent in the qualification and across the suite as a whole. The way in which individual units are written provides a balance of assessment of understanding, practical skills and vocational attributes appropriate to the purpose of the qualifications.

The assessment criteria for a unit are hierarchical and holistic. For example, if an M criterion requires the student to show 'analysis' and the related P criterion requires the student to 'explain', then to satisfy the M criterion a student will need to cover both 'explain' and 'analyse'. The unit assessment grid shows the relationships among the criteria so that assessors can apply all the criteria to the student's evidence at the same time. In *Appendix 5* we have set out a definition of terms that assessors need to understand.

Assessors must show how they have reached their decisions using the criteria in the assessment records. When a student has completed all the assessment for a unit then the assessment team will give a grade for the unit. This is given simply according to the highest level for which the student is judged to have met all the criteria. Therefore:

- **To achieve a Pass**, a student must have satisfied all the Pass criteria for the Learning Outcomes, showing coverage of the unit content and therefore attainment at Level 4 or 5 of the national framework.
- **To achieve a Merit**, a student must have satisfied all the Merit criteria (and therefore the Pass criteria) through high performance in each Learning Outcome.
- **To achieve a Distinction**, a student must have satisfied all the Distinction criteria (and therefore the Pass and Merit criteria), and these define outstanding performance across the unit as a whole.

The award of a Pass is a defined level of performance and cannot be given solely on the basis of a student completing assignments. Students who do not satisfy the Pass criteria should be reported as Unclassified.

The assessment team

It is important that there is an effective team for internal assessment. There are three key roles involved in implementing assessment processes in your centre, each with different interrelated responsibilities, and these roles are listed below. Full information is given in the Pearson Quality Assurance Handbook available in the support section of our website (http://qualifications.pearson.com/).

- **The Programme Leader** has overall responsibility for the programme, its assessment and internal verification to meet our requirements, record keeping and liaison with the External Examiner. The Programme Leader registers with Pearson annually and acts as an assessor, supports the rest of the assessment team, makes sure they have the information they need about our assessment requirements, and organises training, making use of our guidance and support materials.
- **Internal Verifiers** (IVs) oversee all assessment activity in consultation with the Programme Leader. They check that assignments and assessment decisions are valid and that they meet our requirements. IVs will be standardised by working with the Programme Leader. Normally, IVs are also assessors, but they do not verify their own assessments.
- **Assessors** set or use assignments to assess students to national standards. Before taking any assessment decisions, assessors participate in standardisation activities led by the Programme Leader. They work with the Programme Leader and IVs to ensure that the assessment is planned and carried out in line with our requirements.
- Your **External Examiner** (EE) will sample student work across assessors. Your EE will also want to see evidence of informal verification of assignments and assess decisions.

Effective organisation

Internal assessment needs to be well organised so that student progress can be tracked and so that we can monitor that assessment is being carried out in line with national standards. We support you in this through, for example, providing training materials and sample documentation. Our online HN Global service can also help support you in planning and record keeping.

It is particularly important that you manage the overall assignment programme and deadlines to make sure that all your students are able to complete assignments on time.

Student preparation

To ensure that you provide effective assessment for your students, you need to make sure that they understand their responsibilities for assessment and the centre's arrangements. From induction onwards you will want to ensure that students are motivated to work consistently and independently to achieve the requirements of the qualifications. They need to understand how assignments are used, the importance of meeting assignment deadlines, and that all the work submitted for assessment must be their own.

You will need to give your students a guide that explains:

- How assignments are used for assessment
- How assignments relate to the teaching programme
- How students should use and reference source materials, including what would constitute plagiarism.

The guide should also set out your centre's approach to operating assessments, such as how students must submit assignments/work and the consequences of submitting late work and the procedure for requesting extensions for mitigating circumstances.

6.2 Setting effective assessments

Setting the number and structure of assessments

In setting your assessments you need to work with the structure of assessments shown in the relevant section of a unit. This shows the learning aims and outcomes and the criteria that you are expected to follow.

Pearson provide online Sample Assessment Materials (SAMs) for each unit to support you in developing and designing your own assessments.

In designing your own assignment briefs you should bear in mind the following points:

- The number of assignments for a unit must not exceed the number of Learning Outcomes listed in the unit descriptor. However, you may choose to combine assignments, either to cover a number of Learning Outcomes or to create a single assignment for the entire unit.

- You may also choose to combine all or parts of different units into single assignments, provided that all units and all their associated Learning Outcomes are fully addressed in the programme overall. If you choose to take this approach you need to make sure that students are fully prepared, so that they can provide all the required evidence for assessment, and that you are able to track achievement in assessment records.
- A learning outcome must always be assessed as a whole and must not be split into two or more elements.
- The assignment must be targeted to the Learning Outcomes but the Learning Outcomes and their associated criteria are not tasks in themselves. Criteria are expressed in terms of the outcome shown in the evidence.

You do not have to follow the order of the Learning Outcomes of a unit in setting assignments, but later Learning Outcomes often require students to apply the content of earlier Learning Outcomes, and they may require students to draw their learning together.

Assignments must be structured to allow students to demonstrate the full range of achievement at all grade levels. Students need to be treated fairly by being given the opportunity to achieve a higher grade, if they have the ability.

As assignments provide a final assessment, they will draw on the specified range of teaching content for the Learning Outcomes. **The specified unit content must be taught/delivered**. The evidence for assessment need not cover every aspect of the teaching content, as students will normally be given particular examples, case studies or contexts in their assignments. For example, if a student is carrying out one practical performance, or an investigation of one organisation, then they will address all the relevant range of content that applies in that instance.

Providing an assignment brief

A good assignment brief is one that, through providing challenging and authentic sector/work-related tasks, motivates students to provide appropriate evidence of what they have learnt.

An assignment brief should have:

- A vocational scenario: this could be a simple situation or a full, detailed set of vocational requirements that motivates the student to apply their learning through the assignment.
- Clear instructions to the student about what they are required to do, normally set out through a series of tasks.
- An audience or purpose for which the evidence is being provided.
- An explanation of how the assignment relates to the unit(s) being assessed.

Forms of evidence

Pearson BTEC Higher Nationals have always allowed for a variety of forms of assessment evidence to be used, provided they are suited to the type of Learning Outcomes being assessed. For many units, the practical demonstration of skills is necessary and, for others, students will need to carry out their own research and analysis, working independently or as part of a team.

The SAMs give you information on what would be suitable forms of evidence to give students the opportunity to apply a range of employability or transferable skills. Centres may choose to use different suitable forms of evidence to those proposed. Overall, students should be assessed using varied forms of evidence.

These are some of the main types of assessment:

- Written reports, essays
- In-class tests
- Examinations
- Creation of design documents
- Creation of implementation documents
- Work-based projects
- Academic posters, displays, leaflets
- PowerPoint (or similar) presentations
- Recordings of interviews/role plays
- Working logbooks, reflective journals
- Presentations with assessor questioning
- Time-constrained assessment.

(Full definitions of different types of assessment are given in *Appendix 6*.) The form(s) of evidence selected must:

- Allow the student to provide all the evidence required for the Learning Outcomes and the associated assessment criteria at all grade levels.
- Allow the student to produce evidence that is their own independent work.
- Allow a verifier to independently reassess the student to check the assessor's decisions.

For example, when you are using performance evidence, you need to think about how supporting evidence can be captured through recordings, photographs or task sheets.

Centres need to take particular care that students are enabled to produce independent work. For example, if students are asked to use real examples, then best practice would be to encourage them to use examples of their own or to give the group a number of examples that can be used in varied combinations.

6.3 Making valid assessment decisions

Authenticity of student work

An assessor must assess only student work that is authentic, i.e. the student's own independent work. Students must authenticate the evidence that they provide for assessment through signing a declaration stating that it is their own work. A student declaration must state that:

- Evidence submitted for the assignment is the student's own
- The student understands that false declaration is a form of malpractice.

Assessors must ensure that evidence is authentic to a student through setting valid assignments and supervising them during the assessment period. Assessors must also take care not to provide direct input, instructions or specific feedback that may compromise authenticity.

Centres may use Pearson templates or their own templates to document authentication.

During assessment an assessor may suspect that some or all of the evidence from a student is not authentic. The assessor must then take appropriate action using the centre's policies for malpractice. (See section 3.7 in this Programme Specification for further information.)

Making assessment decisions using criteria

Assessors make judgements using the criteria. The evidence from a student can be judged using all the relevant criteria at the same time. The assessor needs to make a judgement against each criterion that evidence is present and sufficiently comprehensive. For example, the inclusion of a concluding section may be insufficient to satisfy a criterion requiring 'evaluation'.

Assessors should use the following information and support in reaching assessment decisions:

- The explanation of key terms in *Appendix 5* of this document
- Examples of moderated assessed work
- Your Programme Leader and assessment team's collective experience supported by the standardisation materials we provide.

Dealing with late completion of assignments

Students must have a clear understanding of the centre's policy on completing assignments by the deadlines that you give them. Students may be given authorised extensions for legitimate reasons, such as illness, at the time of submission, in line with your centre policies (and please also refer to section 3.6 in this Programme Specification).

For assessment to be fair, it is important that students are all assessed in the same way and that some students are not advantaged by having additional time or the opportunity to learn from others. Therefore, it may be advisable that students who do not complete assignments by your planned deadline should not have the opportunity to subsequently resubmit. Centres should develop and publish their own regulations on late submission. However, if you accept a late completion by a student, then the assignment should be assessed normally when it is submitted, using the relevant assessment criteria.

Issuing assessment decisions and feedback

Once the assessment team has completed the assessment process for an assignment, the outcome is a formal assessment decision. This is recorded formally and reported to students. The information given to the student:

- Must show the formal decision and how it has been reached, indicating how or where criteria have been met.
- May show why attainment against criteria has not been demonstrated.
- Must not provide feedback on how to improve evidence but how to improve in the future.

Resubmission opportunity

An assignment provides the final assessment for the relevant Learning Outcomes and is normally a final assessment decision. A student who, for the first assessment opportunity, has failed to achieve a Pass for that unit specification **shall be expected to undertake a reassessment**.

- Only one opportunity for reassessment of the unit will be permitted.
- Reassessment for course work, project- or portfolio-based assessments shall normally involve the reworking of the original task.
- For examinations, reassessment shall involve completion of a new task.
- A student who undertakes a reassessment will have their grade capped at a Pass for that unit.
- A student will not be entitled to be reassessed in any component of assessment for which a Pass grade or higher has already been awarded.

Repeat units

A student who, for the first assessment opportunity and resubmission opportunity, still failed to achieve a Pass for that unit specification:

- At Centre discretion and Assessment Board, decisions can be made to permit a repeat of a unit
- The student must study the unit again with full attendance and payment of the unit fee
- The overall unit grade for a successfully completed repeat unit is capped at a Pass for that unit
- Units can only be repeated once.

Assessment Boards

Each centre is expected by Pearson to hold Assessment Boards for all of its Pearson BTEC Higher National programmes. The main purpose of an Assessment Board is to make recommendations on:

- The grades achieved by students on the individual units
- Extenuating circumstances
- Cases of cheating and plagiarism
- Progression of students on to the next stage of the programme
- The awards to be made to students
- Referrals and deferrals.

Assessment Boards may also monitor academic standards. The main boards are normally held at the end of the session, although if your centre operates on a semester system there may be (intermediate) boards at the end of the first semester. There may also be separate boards to deal with referrals.

Where a centre does not currently have such a process then the External Examiner (EE) should discuss this with the Quality Nominee and Programme Leader, stressing the requirement for Assessment Boards by both Pearson and QAA and that Assessment Board reports and minutes provide valuable evidence for QAA's Review of College Higher Education process

6.4 Planning and record keeping

For internal processes to be effective, an assessment team needs to be well organised and keep effective records. The centre will also work closely with us so that we can quality assure that national standards are being satisfied. This process gives stakeholder's confidence in the assessment approach.

The Programme Leader must have an assessment plan, produced as a spreadsheet. When producing a plan the assessment team will wish to consider:

- The time required for training and standardisation of the assessment team.
- The time available to undertake teaching and carrying out of assessment, taking account of when students may complete external assessments and when quality assurance will take place.
- The completion dates for different assignments.
- Who is acting as Internal Verifier (IV) for each assignment and the date by which the assignment needs to be verified.
- Setting an approach to sampling assessor decisions though internal verification that covers all assignments, assessors and a range of students.
- How to manage the assessment and verification of students' work, so that they can be given formal decisions promptly.
- How resubmission opportunities can be scheduled.

The Programme Leader will also maintain records of assessment undertaken. The key records are:

- Verification of assignment briefs
- Student authentication declarations
- Assessor decisions on assignments, with feedback given to students
- Verification of assessment decisions.

Examples of records and further information are available in the Pearson Quality Assurance Handbook available in the support section of our website (http://qualifications.pearson.com).

6.5 Calculation of the final qualification grade

Conditions for the Award

To achieve a Pearson BTEC Higher National Diploma qualification a student must have:

- completed units equivalent to 120 credits at Level 5;
- achieved at least a Pass in 105 credits at Level 5;
- completed units equivalent to 120 credits at Level 4;
- achieved at least a Pass in 105 credits at Level 4.

To achieve a Pearson BTEC Higher National Certificate qualification a student must have:

- completed units equivalent to 120 credits at Level 4;
- achieved at least a Pass in 105 credits at Level 4.

Compensation Provisions

Compensation Provisions for the Pearson BTEC Higher National Diploma

A student can still be awarded a HND if they have not achieved a minimum of a Pass in one of the 15 credit units at Level 4 and one of the 15 credit units at Level 5 but they have otherwise fulfilled all the above conditions.

Compensation Provisions for the Pearson BTEC Higher National Certificate

A student can still be awarded an HNC if they have not achieved a minimum of a Pass in one of the 15 credit units but they have otherwise fulfilled all the above conditions.

The calculation of the **overall qualification grade** is based on the student's performance in all units to the value of 120 credits. Students are awarded a Pass, Merit or Distinction qualification grade using the points gained through all 120 credits, at Level 4 for the HNC or Level 5 for the HND, based on unit achievement.

- All units in valid combination must be attempted (120 credits)
- At least 105 credits must be Pass or above
- All 120 credits count in calculating the grade
- The overall qualification grade is calculated in the same way for the HNC and for the HND
- The overall qualification grade for the HND will be calculated based on student performance in Level 5 units only.

  Points per credit:

  Pass: 4

  Merit: 6

  Distinction: 8

Point boundaries

Grade	Point boundaries
Pass	420–599
Merit	600–839
Distinction	840 +

Modelled Student Outcomes

Pearson BTEC Level 4 Higher National Certificate

				STUDENT 1		STUDENT 2		STUDENT 3		STUDENT 4		STUDENT 5	
	Credits	Level	Grade	Grade point	Unit points	Grade	Unit points	Grade	Unit points	Grade	Unit points	Grade	Unit points
Core 1	15	4	P	4	60	P	60	P	60	D	120	D	120
Core 2	15	4	P	4	60	P	60	P	60	D	120	M	90
Core 3	15	4	P	4	60	P	60	P	60	D	120	M	90
Core 4	15	4	P	4	60	P	60	M	90	M	90	M	90
Core 5	15	4	M	6	90	P	60	M	90	M	90	M	90
Core 6	15	4	M	6	90	P	60	M	90	M	90	M	90
Opt 1	15	4	M	6	90	M	90	D	120	D	120	D	120
Opt 2	15	4	M	6	90	M	90	D	120	D	120	D	120
TOTAL					600		540		690		870		810
GRADE					M		P		M		D		M

Pearson BTEC Level 5 Higher National Diploma

				STUDENT 1		STUDENT 2		STUDENT 3		STUDENT 4		STUDENT 5	
	Credits	Level	Grade	Grade point	Unit points	Grade	Unit points	Grade	Unit points	Grade	Unit points	Grade	Unit points
Core 1	15	4	P	0	0	P	0	P	0	D	0	P	0
Core 2	15	4	P	0	0	P	0	P	0	D	0	M	0
Core 3	15	4	P	0	0	P	0	P	0	D	0	M	0
Core 4	15	4	P	0	0	P	0	M	0	M	0	M	0
Core 5	15	4	M	0	0	P	0	M	0	M	0	P	0
Core 6	15	4	M	0	0	P	0	M	0	D	0	U	0
Opt 1	15	4	M	0	0	P	0	D	0	D	0	D	0
Opt 2	15	4	M	0	0	P	0	D	0	D	0	D	0
Core 7	30	5	M	6	180	M	180	M	180	P	120	D	240
Core 8	15	5	M	6	90	M	90	M	90	P	60	D	120
Opt 3	15	5	M	6	90	M	90	D	120	P	60	D	120
Opt 4	15	5	M	6	90	P	60	D	120	P	60	D	120
Opt 5	15	5	M	6	90	P	60	D	120	M	90	M	90
Opt 6	15	5	M	6	90	P	60	M	90	M	90	P	60
Opt 7	15	5			90	P	60	M	90	M	90	M	90
TOTAL	240				720		600		810		570		840
GRADE					M		M		M		P		D

7. Quality assurance

Pearson's quality assurance system for all Pearson BTEC Higher National programmes is benchmarked to Level 4 and Level 5 on the Quality Assurance Agency (QAA) Framework for Higher Education Qualifications (FHEQ). This will ensure that centres have effective quality assurance processes to review programme delivery. It will also ensure that the outcomes of assessment are to national standards.

The quality assurance process for centres offering Pearson BTEC Higher National programmes comprise five key components:

1 The approval process

2 Monitoring of internal centre systems

3 Independent assessment review

4 Annual programme monitoring report

5 Annual student survey.

7.1 The approval process

Centres new to the delivery of Pearson programmes will be required to seek approval initially through the existing centre approval process and then through the programme approval process. Programme approval for new centres can be considered in one of two ways:

- Desk-based approval review
- Review and approval visit to the centre.

Prior to approval being given, centres will be required to submit evidence to demonstrate that they:

- Have the human and physical resources required for effective delivery and assessment.
- Understand the implications for independent assessment and agree to abide by these.
- Have a robust internal assessment system supported by 'fit for purpose' assessment documentation.
- Have a system to internally verify assessment decisions, to ensure standardised assessment decisions are made across all assessors and sites.

Applications for approval must be supported by the head of the centre (Principal or Chief Executive, etc.) and include a declaration that the centre will operate the programmes strictly, as approved and in line with Pearson requirements.

Centres seeking to renew their programme approval upon expiry of their current approval period may be eligible for the Automatic Approval process, subject to the centre meeting the eligibility criteria set out by Pearson.

Regardless of the type of centre, Pearson reserves the right to withdraw either qualification or centre approval when it deems there is an irreversible breakdown in the centre's ability either to quality assure its programme delivery or its assessment standards.

7.2 Monitoring of internal centre systems

Centres will be required to demonstrate ongoing fulfilment of the centre approval criteria over time and across all Higher National programmes. The process that assures this is external examination, which is undertaken by External Examiners. Centres will be given the opportunity to present evidence of the ongoing suitability and deployment of their systems to carry out the required functions. This includes the consistent application of policies affecting student registrations, appeals, effective internal examination and standardisation processes. Where appropriate, centres may present evidence of their operation within a recognised code of practice, such as that of the Quality Assurance Agency for Higher Education. Pearson reserves the right to confirm independently that these arrangements are operating to Pearson's standards.

Pearson will affirm, or not, the ongoing effectiveness of such systems. Where system failures are identified, sanctions (appropriate to the nature of the problem) will be applied, in order to assist the centre in correcting the problem.

7.3 Independent assessment review

The internal assessment outcomes reached for all Pearson BTEC Higher National programmes benchmarked to Level 4 and Level 5 of the Quality Assurance Agency (QAA) Framework for Higher Education Qualifications (FHEQ), are subject to a visit from a Pearson appointed External Examiner. The outcomes of this process will be:

- To confirm that internal assessment is to national standards and allow certification, ***or***
- To make recommendations to improve the quality of assessment outcomes before certification is released, ***or***
- To make recommendations about the centre's ability to continue to be approved for the Pearson BTEC Higher National qualifications in question.

7.4 Annual Programme Monitoring Report (APMR)

The APMR is a written annual review form that provides opportunity for centres to analyse and reflect on the most recent teaching year. By working in collaboration with centres, the information can be used by Pearson to further enhance the quality assurance of the Pearson BTEC Higher National programmes.

7.5 Annual student survey

Pearson will conduct an annual survey of Pearson BTEC Higher National students. The purpose of the survey is to enable Pearson to evaluate the student experience as part of the quality assurance process, by engaging with students studying on these programmes.

7.6 Centre and qualification approval

As part of the approval process, your centre must make sure that the resource requirements listed below are in place before offering the qualification.

Centres must have appropriate physical resources (for example equipment, IT, learning materials, teaching rooms) to support the delivery and assessment of the qualifications.

- Staff involved in the assessment process must have relevant expertise and/or occupational experience.
- There must be systems in place to ensure continuing professional development for staff delivering the qualification.
- Centres must have in place appropriate health and safety policies relating to the use of equipment by staff and students.
- Centres must deliver the qualification in accordance with current equality legislation.
- Centres should refer to the individual unit descriptors to check for any specific resources required.

7.7 Continuing quality assurance and standards verification

We produce annually the latest version of the **Pearson Quality Handbook**. It contains detailed guidance on the quality processes required to underpin robust assessment and internal verification.

The key principles of quality assurance are that:

- A centre delivering Pearson BTEC Higher National programmes must be an approved centre, and must have approval for the programmes or groups of programmes that it is delivering.
- The centre agrees, as part of gaining approval, to abide by specific terms and conditions around the effective delivery and quality assurance of assessment; it must abide by these conditions throughout the period of delivery.
- Pearson makes available to approved centres a range of materials and opportunities through online standardisation; these are intended to exemplify the processes required for effective assessment and provide examples of effective standards. Approved centres must use the materials and services to ensure that all staff delivering BTEC qualifications keep up to date with the guidance on assessment.
- An approved centre must follow agreed protocols for standardisation of assessors and verifiers, for the planning, monitoring and recording of assessment processes, and for dealing with special circumstances, appeals and malpractice.

The approach of quality-assured assessment is through a partnership between an approved centre and Pearson. We will make sure that each centre follows best practice and employs appropriate technology to support quality-assurance processes where practicable. We work to support centres and seek to make sure that our quality-assurance processes do not place undue bureaucratic processes on centres. We monitor and support centres in the effective operation of assessment and quality assurance.

The methods we use to do this for Pearson BTEC Higher Nationals include:

- Making sure that all centres complete appropriate declarations at the time of approval
- Undertaking approval visits to centres
- Making sure that centres have effective teams of assessors and verifiers who are trained to undertake assessment
- Assessment sampling and verification through requested samples of assessments, completed assessed student work and associated documentation
- An overarching review and assessment of a centre's strategy for assessing and quality-assuring its BTEC programmes.

An approved centre must make certification claims only when authorised by us and strictly in accordance with requirements for reporting. Centres that do not fully address and maintain rigorous approaches to quality assurance cannot seek certification for individual programmes or for all Pearson BTEC Higher National qualifications.

Centres that do not comply with remedial action plans may have their approval to deliver qualifications removed.

8. Recognition of Prior Learning and attainment

Recognition of Prior Learning (RPL) is a method of assessment (leading to the award of credit) that considers whether students can demonstrate that they can meet the assessment requirements for a unit through knowledge, understanding or skills they already possess, and so do not need to develop through a course of learning.

Pearson encourages centres to recognise students' previous achievements and experiences whether at work, home or at leisure, as well as in the classroom. RPL provides a route for the recognition of the achievements resulting from continuous learning. RPL enables recognition of achievement from a range of activities using any valid assessment methodology. Provided that the assessment requirements of a given unit or qualification have been met, the use of RPL is acceptable for accrediting a unit, units or a whole qualification. Evidence of learning must be valid and reliable.

For full guidance on RPL please refer to the Recognition of Prior Learning policy document available in the support section of our website (https://qualifications.pearson.com).

9. Equality and diversity

Equality and fairness are central to our work. The design of these qualifications embeds consideration of equality and diversity as set out in the qualification regulators' General Conditions of Recognition. Promoting equality and diversity involves treating everyone with equal dignity and worth, while also raising aspirations and supporting achievement for people with diverse requirements, entitlements and backgrounds. An inclusive environment for learning anticipates the varied requirements of students, and aims to ensure that all students have equal access to educational opportunities. Equality of opportunity involves enabling access for people who have differing individual requirements as well as eliminating arbitrary and unnecessary barriers to learning. In addition, students with and without disabilities are offered learning opportunities that are equally accessible to them, by means of inclusive qualification design.

Pearson's equality policy requires all students to have equal opportunity to access our qualifications and assessments. It also requires our qualifications to be designed and awarded in a way that is fair to every student. We are committed to making sure that:

- Students with a protected characteristic (as defined in legislation) are not, when they are undertaking one of our qualifications, disadvantaged in comparison to students who do not share that characteristic.
- All students achieve the recognition they deserve from undertaking a qualification and that this achievement can be compared fairly to the achievement of their peers.

Pearson's policy regarding access to its qualifications is that:

- They should be available to everyone who is capable of reaching the required standards
- They should be free from any barriers that restrict access and progression
- There should be equal opportunities for all those wishing to access the qualifications.

Centres are required to recruit students to Higher National qualifications with integrity. This will include ensuring that applicants have appropriate information and advice about the qualifications, and that the qualification will meet their needs. Centres will need to review the entry profile of qualifications and/or experience held by applicants, considering whether this profile shows an ability to progress to a higher level qualification. Centres should take appropriate steps to assess each applicant's potential and make a professional judgement about their ability to successfully complete the programme of study and achieve the qualification. This assessment will need to take account of the support available to the student within the centre during their programme of study and any specific support that might be necessary to allow the student to access the assessment for the qualification. Centres should consult our policy documents on students with particular requirements.

Access to qualifications for students with disabilities or specific needs

Students taking a qualification may be assessed in British Sign Language or Irish Sign Language, where it is permitted for the purpose of reasonable adjustments. Further information on access arrangements can be found in the Joint Council for Qualifications (JCQ) document Access Arrangements, Reasonable Adjustments and Special Consideration for General and Vocational Qualifications. Details on how to make adjustments for students with protected characteristics are given in the document *Pearson Supplementary Guidance for Reasonable Adjustment* and *Special Consideration in Vocational Internally Assessed Units*. See the support section our website for both documents (http://qualifications.pearson.com/).