BTEC

# SPECIFICATION

# BTEC Level 1/Level 2 Tech Award in DIGITAL INFORMATION TECHNOLOGY

*First teaching September 2018 | First certification July 2020*

ISSUE 3

Pearson

# Pearson BTEC Level 1/Level 2 Tech Award in Digital Information Technology

## Specification

First teaching September 2018
Issue 3

**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

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This specification is Issue 3. Key changes are sidelined. We will inform centres of any changes to this issue. The latest issue can be found on our website.

*References to third-party material made in this specification are made in good faith. We do 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.)*

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# Pearson BTEC Tech Awards – introduction

## About the BTEC Tech Award suite

Tech Awards have been developed by Pearson to give learners at Key Stage 4 England, Northern Ireland and Wales the opportunity to study one or more vocational areas as part of their curriculum. We have developed the qualifications in consultation with secondary school and further education representatives, and subject specialists to ensure that they engage and prepare learners for either academic or vocational progression post-16.

As part of a Key Stage 4 programme, learners will be studying a broad range of GCSEs, including English, mathematics and science. The BTEC Tech Award suite has been designed to allow learners to draw on the knowledge and skills acquired from these subjects where relevant. When studying for a 'BTEC', learners can use the knowledge and skills from GCSEs, giving them the opportunity to apply their academic knowledge to everyday and work contexts.

The BTEC Tech Award suite is an introduction to vocational learning. The qualifications give learners the opportunity to build skills that show an aptitude for further learning, both in the sector and more widely. The approach to the suite is based on well-established BTEC assessment approaches that are proven to be successful in building skills and motivating learners to engage fully with challenging study. There is no limit to progression options as the skills acquired are applicable to a range of post-16 study options.

The BTEC Tech Award suite differs from other BTECs designed to be taken post-16 as the qualifications offer a basis for further study, rather than meeting all the vocational requirements that learners need to progress directly to a job role in a defined occupational area. The focus is on building skills to show aptitude and improving understanding of progression options so that learners who achieve one or more of the qualifications are equipped to go on to become work ready for an occupation post-16.

## About recognition as Department for Education technical awards

The BTEC Tech Award suite has been designed to meet the Department for Education (DfE) requirements for qualifications to be offered as technical awards for 14–16-year-olds.

The DfE has set out characteristics for technical awards through which vocational qualifications can be recognised as part of performance measures in the open category of Progress 8. To be recognised as technical awards, it is expected that qualifications will focus on developing sector-specific knowledge and technical skills in a practical learning environment. It is also expected that the qualifications form part of a Key Stage 4 learning programme that enables both academic and vocational progression.

## About the digital sector

The digital sector is a major source of employment in the UK, with 1.46 million people working in digital companies and around 45,000 digital jobs advertised at any one time. Digital skills span all industries; almost all jobs in the UK today require employees to have a good level of digital literacy. The UK has positioned itself to be the 'digital capital of Europe' as it continues to invest billions every year in digital skills and commerce.

## Summary of Pearson BTEC Level 1/Level 2 Tech Award in Digital Information Technology Issue 3 changes

| Summary of changes made between the previous issue and this current issue | Page number |
|---|---|
| The wording under *Section 8 Final grading and awarding* subsection *Calculation of the qualification grade* has been updated to clarify current practice in ensuring maintenance and consistency of qualification standards. | Page 63 |
| The points thresholds have been updated in the Calculation of grade table. | Page 64 |
| Example 2 has been updated as a Merit award. | Page 65 |
| The wording in *Section 9 Administrative arrangements* subsections *Learner malpractice* and *Teacher/centre malpractice* have been updated to clarify suspension of certification in certain circumstances. | Page 69 |

## Summary of Pearson BTEC Level 1/Level 2 Tech Award in Digital Information Technology Issue 2 changes

| Summary of changes made between Issue 1 and Issue 2 | Page number |
|---|---|
| Reference to learners in Northern Ireland and Wales was included in the Pearson BTEC Tech Awards – introduction section. | Introduction |
| A table of *Key terms typically used in assessment* has been added to the externally assessed component to ensure consistency in teaching and assessment. | Pages 51-52 |
| Reference to CCEA Regulation and Qualifications Wales was included in Section 8, paragraph 2. | Page 63 |

# Contents

# 1 Pearson BTEC Level 1/Level 2 Tech Award in Digital Information Technology – purpose

## Who is the qualification for?

The Pearson BTEC Level 1/Level 2 Tech Award in Digital Information Technology (Qualification Number: 603/2740/6), is for learners who want to acquire technical knowledge and technical skills through vocational contexts by studying the knowledge, understanding and skills related to data management, data interpretation, data presentation and data protection as part of their Key Stage 4 learning. The qualification recognises the value of learning skills, knowledge and vocational attributes to complement GCSEs. The qualification will broaden the learners experience and understanding of the varied progression options available to them.

## What does the qualification cover?

The Award gives learners the opportunity to develop sector-specific knowledge and skills in a practical learning environment. The main focus is on four areas of equal importance, which cover the:

- development of key skills that prove your aptitude in digital information technology, such as project planning, designing and creating user interfaces, creating dashboards to present and interpret data
- process that underpins effective ways of working in digital information technology, such as project planning, the iterative design process, cyber security, virtual teams, legal and ethical codes of conduct
- attitudes that are considered most important in digital information technology, including personal management and communication
- knowledge that underpins effective use of skills, process and attitudes in the sector such as how different user interfaces meet user needs, how organisations collect and use data to make decisions, virtual workplaces, cyber security and legal and ethical issues.

This Award complements the learning in GCSE programmes such as GCSE in Computer Science by broadening experience and skills participation in different type of performance activities with the opportunity to practically apply your knowledge and skills, through project work such as developing ideas and performing for specific audiences.

## What can the qualification lead to?

Study of the qualification as part of Key Stage 4 learning will help learners to make more informed choices for further learning, either generally or in this sector. The choices that learners can make post-16 will depend on their overall level of attainment and their performance in the qualification.

Learners who generally achieve at Level 2 across their Key Stage 4 learning might consider progression to:

- A Levels as preparation for entry to higher education in a range of subjects
- study of a vocational qualification at Level 3, such as a BTEC National in IT, which prepares learners to enter employment or apprenticeships, or to move on to higher education by studying a degree in the digital sector.

Learners who generally achieve at Level 1 across their Key Stage 4 learning might consider progression to:

- study at Level 2 post-16 in a range of technical routes designed to lead to work, to progression to employment, to apprenticeships or to further study at Level 3. For these learners, the attitudes and the reflective and communication skills covered in this qualification will help them achieve
- study of IT Support or Digital Technology through the study of a Technical Certificate. Learners who perform strongly in this qualification compared to their overall performance should strongly consider this progression route as it can lead ultimately to employment in the digital sector.

# 2 Structure

## Total Qualification Time

For all regulated qualifications, Pearson specifies a total number of hours that it is estimated learners will require to complete and show achievement for the qualification: this is the Total Qualification Time (TQT). Within TQT, Pearson identifies the number of Guided Learning Hours (GLH) that we estimate a centre delivering the qualification might provide. Guided learning means activities such as lessons, tutorials, online instruction, supervised study and giving feedback on performance that directly involve teachers and assessors in teaching, supervising and invigilating learners. Guided learning includes the time required for learners to complete external assessment under examination or supervised conditions.

In addition to guided learning, other required learning directed by teachers or assessors will include private study, preparation for assessment and undertaking assessment when not under supervision, such as preparatory reading, revision and independent research.

The Pearson BTEC Level 1/Level 2 Tech Award in Digital Information Technology has:

- Total Qualification Time: 150 hours
- Guided Learning Hours: 120 hours.

Centres should take note of these hours in planning their programme but should also use their professional judgement to determine the provision of guided learning and study time across the components.

## Components

Learners are required to complete and achieve all three components in the qualification.

| **Pearson BTEC Level 1/Level 2 Tech Award in Digital Information Technology** | | | | |
|---|---|---|---|---|
| **Component number** | **Component title** | **GLH** | **Level** | **How assessed** |
| **1** | Exploring User Interface Design Principles and Project Planning Techniques | **36** | **1/2** | Internal |
| **2** | Collecting, Presenting and Interpreting Data | **36** | **1/2** | Internal |
| **3** | Effective Digital Working Practices | **48** | **1/2** | External Synoptic |

The three components focus on the assessment of knowledge, skills and practices. These are all essential to developing a basis for progression and, therefore, learners need to achieve all components in order to achieve the qualification.

The components are interrelated and they are best seen as part of an integrated whole rather than as totally distinct study areas. Learners will normally take this qualification over a two-year period or longer. This means that they must be given the opportunity to build their confidence in understanding the sector, vocational contexts and vocational attributes over a long period during the course of study before they are assessed. As the interrelated components are not linked to occupational roles, certification is not available at component level.

## Assessment

The three components in the qualification give learners the opportunity to develop broad knowledge and understanding of the digital sector and specialist skills and techniques in project planning, designing user interfaces and manipulating and interpreting data at Levels 1 and 2.

### Internal assessment

Components 1 and 2 are assessed through internal assessment. Internal assessment for these components has been designed to relate to achievement of application of the conceptual underpinning for the sector through realistic tasks and activities. This style of assessment promotes deep learning through ensuring the connection between knowledge and practice. The components focus on:

- the development of core knowledge and understanding of different types of user interfaces, how user interface design principles are used to meet the needs of different users, and how organisations collect, manipulate and interpret data to draw conclusions and make decisions
- the development and application of skills such as project planning, iterative design of a user interface, using data manipulation tools to create a dashboard, interpreting and drawing conclusions from data
- reflective practice through the development of skills and techniques that allow learners to respond to feedback on their design for a user interface and to identify areas for improvement.

Internal assessment is through assignments that are subject to external standards verification. For setting assignments, we provide authorised assignment briefs and guidance in each component. This means that you can adapt materials to your local contexts and assess assignments that provide the valid and rigorous final summative assessment for each component.

You will make grading decisions based on the requirements and supporting guidance given in the components. For further information on using and assessing through assignments, including resubmissions, see *Section 5*.

### External synoptic assessment

There is one external assessment, Component 3, it provides the main synoptic assessment for the qualification. Component 3 builds directly on Components 1 and 2, and enables learning to be brought together and related to a real-life situation.

*Component 3: Effective Digital Working Practices* requires learners to apply performances skills and techniques in response to a brief and stimulus developing group performance workshop for a selected audience.

The design of this external assessment ensures that there is sufficient stretch and challenge, enabling the assessment of knowledge and understanding at the end of the learning period.

The external assessment is based on a key task/key tasks that requires learners to demonstrate that they can identify and use effectively an appropriate selection of skills, techniques, concepts, theories and knowledge from across the whole qualification in an integrated way.

The external assessment takes the form of a set task/external assessment taken under supervised conditions, which is then marked and a grade awarded by Pearson. Learners are permitted to resit the external assessment once during their programme by taking a new assessment. The external assessment comprises 40 per cent of the total GLH of the qualification and is weighted accordingly in the calculation of the overall qualification grade. This component should be delivered and assessed at the end of the course of study.

 

| Component | Description of task | Availability |
|---|---|---|
| **Component 3: Effective Digital Working Practices** | • External assessment set and marked by Pearson, completed under supervised conditions.<br>• The assessment must be completed in 1 hour 30 minutes.<br>• 60 marks. | **February and May**<br>**First assessment February 2020** |

## Language of assessment

Assessment of the internal and external components for these qualifications will be available in English. All learner work must be in English. A learner taking the qualifications may be assessed in British Sign Language where it is permitted for the purpose of reasonable adjustment.
For information on reasonable adjustments see *Section 9.*

## Grading of the qualification

This qualification has a grading scale that fully encompasses achievement at Levels 1 and 2 of the Regulated Qualifications Framework. This enables learners of all abilities to receive appropriate recognition of their achievement and will motivate them to improve and progress during their period of learning and formative assessment. This grading scale also gives clearer information for progression providers on the capability of learners to succeed in post-16 study programmes.

Internally-assessed components are assessed using a grading scale ranging from Level 1 Pass to Level 2 Distinction. Centres report outcomes at five grade points. Please see *Section 5* for guidance on how to assess. Each component has detailed information on how to assess across the grades.

The externally-assessed component is marked and awarded on a continuum, using grading descriptors set at Level 1 Pass, Level 2 Pass and Level 2 Distinction. The outcome is reported at six grade points from Level 1 Pass to Level 2 Distinction. Learners will also receive a points score.

The difference in the grade scale for internal and external components reflects how the final component discriminates performance more fully. This is because of the synoptic nature of the assessment, in which a Level 1 Distinction grade is one where there is evidence at Level 2 in part but does not draw consistently on content across the breadth of the qualification.

The qualification is graded over seven grades from Level 1 Pass to Level 2 Distinction*. Learners must achieve all components at Level 1 Pass or above in order to be awarded a qualification. The overall grade is a direct aggregation of performance across individual components, with each component weighted according to GLH. Please see *Section 8* for more information on the approach we are using to grade qualifications.

The relationship between qualification-grading scales and component grades will be subject to regular review as part of Pearson's standards monitoring processes. Reviews are carried out on the basis of learner performance and in consultation with key users of the qualification.

# 3 Components

## Understanding your components

The components in this specification set out details of all the knowledge and skills a learner must acquire and the assessment requirements that will support you in preparing your learners.

The components help you to undertake assessment and quality assurance effectively.

The tables here explain the key terms used for the internal and external components. It is important that all teachers, assessors, internal verifiers and other staff responsible for the programme read and digest this section.

### Internal components

| Section | Explanation |
|---|---|
| **Component in brief** | A brief description of the content of the component. Can be used in summary documents, brochures, etc. |
| **Component introduction** | This is designed with learners in mind. It indicates why the component is important and how learning is structured, it might be applied when progressing to further study. |
| **Learning aims** | These define the scope of the knowledge and skills that a learner will acquire in the component. |
| **Teaching content** | This states the knowledge and skills that must be taught. All content is mandatory and includes some examples, denoted as 'e.g.', of what must be delivered. |
| **Suggestions for delivery** | This gives you guidance on how you may choose to approach delivery of the components in the qualification. |
| **Essential information for setting assignments** | This gives you information on how full assignments can be developed for each learning aim. |
| **Assessment criteria** | Assessment criteria state the levels of achievement that a learner must demonstrate in their assessment to meet the learning aims. Assessment criteria are used by assessors to determine grading levels for an assessment. |
| **Essential information for assessment decisions** | This section gives guidance on the evidence that learners are expected to provide to reach the Level 1 Pass, Merit and Level 2 Pass, Merit and Distinction standards. It also gives examples and clarification. |
| **Resource requirements** | This section lists any specific resources that you need to be able to teach and assess. For information on support resources see *Section 10.* |

 

## External components

| Section | Explanation |
|---|---|
| **Component in brief** | A brief description of the content of the component. Can be used in summary documents, brochures, etc. |
| **Component introduction** | This is designed with learners in mind. It indicates why the component is important and how learning is structured, it might be applied when progressing to further study. |
| **Summary of assessment** | Sets out the type of external assessment used and the way it is used to assess achievement. |
| **Assessment outcomes** | These show the hierarchy of knowledge, understanding, skills and behaviours assessed. |
| **Essential content** | This gives the content that must be taught for the externally-set task/external assessment. Content will be sampled through the external assessment over time. |
| **Grade descriptors** | We use grade descriptors when making judgements on grade boundaries. You can use them to understand what we expect to see from learners at particular grades. |

# Component 1: Exploring User Interface Design Principles and Project Planning Techniques

Levels: **1/2**

Assessment type: **Internal**

Guided learning hours: **36**

## Component in brief

Learners will develop their understanding of what makes an effective user interface and how to effectively manage a project. They will use this understanding to plan, design and create a user interface.

## Introduction

As digital technologies and organisations continue to evolve, each new development offers new and exciting ways of completing tasks and interacting with our hardware devices. Each new development opens up a new project with a new set of user requirements that needs to be solved. In this component, you will learn different project planning techniques that can be used to both plan and deliver a project that meets a set of user requirements.

User interfaces allow individuals and individuals in organisations to interact with digital technologies. The design of the user interface is crucial in ensuring that users are able to interact positively with their hardware devices. In this component, you will learn the different design principles that can be used to design effective user interfaces and apply appropriate project planning techniques to create a user interface that meets user requirements.

This component will build on Key Stage 3 where you have learned about computer systems and software applications. You will learn how effective design and planning has a major impact on the user experience. This component will help you to progress to further vocational or academic qualifications. It will also enable you to develop transferable project planning skills that can be used across all areas of study and employment.

## Learning aims

**A** Investigate user interface design for individuals and organisations

**B** Use project planning techniques to plan and design a user interface

**C** Develop and review a user interface.

# Teaching content

## Learning aim A: Investigate user interface design for individuals and organisations

### A1 What is a user interface?

Learners will investigate different types of user interface used by individuals and organisations. They will investigate how they vary across different uses, devices and purposes.

- Definition of user interface:
  - software features
  - human features
  - how software features can be used to facilitate human–device interaction.
- Types of interface:
  - text based
  - speech/natural language
  - GUI/WIMPs
  - sensors
  - menu/forms.
- Range of uses, e.g.:
  - computers
  - handheld devices
  - entertainment systems
  - domestic appliances
  - controlling devices
  - embedded systems.
- Factors affecting the choice of user interface:
  - performance/response time
  - ease of use
  - user requirements
  - user experience
  - accessibility
  - storage space.
- Hardware and software influences:
  - operating systems/platforms
  - types/size of screen, e.g. touchscreen vs traditional displays
  - types of user input, e.g. keyboard, mouse, voice, gestures
  - hardware resources available, e.g. processing power, memory
  - emerging technologies, e.g. new innovations of input techniques.

 

### A2 Audience needs

Learners will investigate the varying needs of the audience and how they affect both the type and the design of the interface.

- Accessibility needs:
  - visual
  - hearing
  - speech
  - motor
  - cognitive.
- Skill level:
  - expert
  - regular
  - occasional
  - novice.
- Demographics:
  - age
  - beliefs/values
  - culture
  - past experiences.

### A3 Design principles

Learners will investigate a wide variety of design principles that provides both appropriate and effective user interaction with hardware devices.

- Colours:
  - use of limited range of colours
  - use of organisational house style
  - ensuring that colours do not clash
  - use of textures, e.g. glossy, corporate textures in colours, warm, fabric-style textures.
- Font style/size:
  - ensuring text style/style is readable
  - use of sans serif fonts for screen reading
  - avoiding decorative fonts.
- Language:
  - using appropriate language for user needs, e.g. age-appropriate language
  - using language that is appropriate for user skill level.
- Amount of information:
  - providing appropriate amount of information for the task
  - making appropriate use of white space.
- Layout:
  - consistency throughout the whole interface
  - keeping the layout as close as possible to user expectations
  - placing important items in prominent positions
  - grouping related tasks together
  - use of navigational components, e.g. search fields, breadcrumbs, icons
  - use of input controls, e.g. dropdown lists, tick boxes, toggles.

- User perception of:
  - colour, e.g. green to indicate go/successful interactions, orange to indicate warnings, red to indicate stop/errors
  - sound, e.g. positive high-pitched sounds, negative low-pitched sounds
  - symbols, e.g. green ticks, red crosses
  - visuals, e.g. photographs, symbols, graphics.
- Retaining user attention:
  - grabbing attention, e.g. pop-up messages, flashing graphics, sound, animation
  - ensuring the screen is uncluttered
  - clearly labelled items/features
  - use of predetermined/default values for common user inputs
  - use of autofill to reduce the amount of data entry needed, e.g. postcodes
  - use of tip text to provide help if the user is unsure what buttons/tools do.
- Intuitive design:
  - use graphics to denote what buttons do
  - helpful pop-up messages
  - easy-to-use help feature
  - ensuring consistency
  - easy reversal of actions.

### A4 Designing an efficient user interface

Learners will investigate techniques that can be used to improve both the speed and access to user interfaces.

- Use of keyboard shortcuts
- Informative feedback
- Easy reversal of actions
- Ensuring buttons/links are distinguishable
- Using bigger objects to influence selection and reduce selection time
- Making objects stand out to reduce focus time
- Placing related objects next to each other to reduce selection time.

## Learning aim B: Use project planning techniques to plan and design a user interface

### B1 Project planning techniques

Learners will investigate different planning tools and design methodologies that can be used to plan, monitor and execute projects.

- Planning tools:
  - task lists
  - written or graphical descriptions
  - Gantt charts
  - critical path diagram
  - PERT charts
  - mood boards
  - mindmaps.
- Methodologies:
  - waterfall
  - iterative, e.g. Agile.

 

### B2 Create a project plan

Learners will select suitable project planning techniques to develop a project plan for the development of a user interface for a given brief.

- SMART aims/objectives:
  - Specific
  - Measurable
  - Achievable
  - Realistic
  - Timely.
- Audience and purpose.
- Project requirements:
  - user requirements
  - output requirements, e.g. visual, audio, haptic
  - input requirements, e.g. mouse, keyboard, voice, touch
  - user accessibility requirements.
- Timescales:
  - overall timescale
  - when tasks will be completed, including sub-tasks
  - key milestones, including iterative review points with the user
  - when resources will be needed.
- Constraints:
  - time
  - resources
  - task dependencies
  - security.
- Risks:
  - potential risks to project
  - contingency planning.

### B3 Create an initial design

Learners will create an initial design using the design principles listed in section A3.

- Produce a design that meets:
  - the user requirements, including input and output requirements
  - user accessibility needs.
- Produce a design specification that includes:
  - visualisation, e.g. storyboards, sketches
  - hardware requirements
  - software requirements
  - a test strategy.
- Produce a design that allows for:
  - increased user confidence/familiarity
  - reduced learning time of new interfaces/features
  - reduced time to complete tasks
  - increased user attention
  - reduced need for specialised knowledge.

## Learning aim C: Develop and review a user interface

### C1 Developing a user interface

Learners will use their design to produce a user interface.

- Features:
  - awareness of intended device, e.g. touchscreen, watch
  - how the user requirements have been met
  - the overall look and feel
  - inputs, e.g. key presses, mouse clicks, touch
  - outputs, e.g. error messages, sounds
  - navigation methods
  - ease of use.

### C2 Refining the user interface

Learners will refine their user interface using an iterative process with potential users.

- Refining the designs by:
  - presenting the design to potential users
  - refining the interface to account for potential user feedback
  - repeating the iterative process until the design is complete.
- Document the changes made through each iteration.

### C3 Review

Learners will review the success of the user interface and the use of their chosen project planning techniques.

- Strengths and weaknesses of the user interface, e.g.:
  - how well the user requirements have been met
  - suitability for audience and purpose
  - ease of use
  - how effectively the design principles have been met
  - areas that could be developed to better meet audience needs/design principles.
- Strengths and weaknesses of the project planning techniques, e.g.:
  - how well the chosen project planning and methodologies met the needs of the task
  - project constraints and how they were overcome
  - impact of using an iterative design approach
  - lessons learned.

 

## Suggestions for delivery

Successful delivery of this component will allow learners to develop their knowledge and understanding of different project planning techniques that can be used to plan, develop and monitor projects. Learners will develop their knowledge and understanding of different user interface design principles. Learners will then be able to select appropriate project planning techniques to be able to plan and create an effective user interface that meets a set of defined user requirements.

You may choose to deliver this component alongside Components 2 or 3. Assignments can focus on each learning aim or you can combine them within or across components.

## Essential information for setting assignments

The recommended structure for setting assignments is one for each learning aim, however you may combine learning aims within or across components. Suggested examples of how assignments may be set are outlined here. You should also refer to the authorised assignment briefs on our website. See *Section 5* for more information.

**Learning aim A: Investigate user interface design for individuals and organisations**

**Description**

Learners will select and investigate two different types of user interface. They will assess how:

- effectively the user interface meets the audience's requirements, including their accessibility needs, skills level and demographics
- effectively different design principles have been used to allow both appropriate and effective user interactions with hardware devices
- techniques have been used to allow different types of users to efficiently interact with the interface.

**Example task(s)**

- Learners will be given a range of different devices, e.g. mobile phones, tablets, robots and will then investigate the type of user interface used and how the user interacts with them.
- Learners will explain how two different types of interface meets design principles, e.g. use of colours, textures, font styles/sizes, language, layout and how they can be combined to create an intuitive design.
- Learners will explain how two different interfaces meet/do not meet the requirements of corresponding users.
- Learners will assess how the design principles used in each interface meet user requirements.

**Evidence**

Evidence must fully meet the requirements of the assessment criteria and could include:

- a written document containing annotated screenshots
- a podcast
- a presentation (including speaker notes).

**Learning aim B: Use project planning techniques to plan and design a user interface**

**Description**

Learners will investigate different project planning techniques. Teachers will provide learners with a brief for the design requirements of a user interface.

Learners will:

- select appropriate project planning tools and methodologies to create a project plan, including outlining the timescales, possible constraints and risks in their project
- produce an initial design for a user interface that meets user, input, output and accessibility needs. Their initial design should show the designs for at least four different screens in their user interface.

Learners are not allowed to use the dashboard they created in Component 2 as evidence of creating a user interface. They are required to design, create and refine a different user interface for a different set of user requirements.

**Example task(s)**

- Learners will select appropriate project planning techniques to meet the given brief.
- Learners will then use their planning techniques to put together a project plan that includes the use of relevant project planning tools and methodologies.
- Learners will create a design specification that meets the needs of different users and design principles.

**Evidence**

Evidence must fully meet the requirements of the assessment criteria and could include:

- a project plan containing a combination project planning tools, e.g. task lists, written descriptions, Gantt charts, mindmaps
- a design specification containing a combination of different design techniques, e.g. tables, sketches, storyboards.

 

**Learning aim C: Develop and review a user interface**

**Description**

Learners will follow their plan and create a user interface.

Learners will then:

- obtain feedback from potential users and refine the user interface until it is complete
- evaluate the strengths and weaknesses of their user interface
- evaluate the strengths and weaknesses of their project plan.

**Example task(s)**

- Learners can use various software tools to practise creating user interfaces. For example, learners can use web authoring software to develop a user interface for a website or app development software to develop a user interface for a mobile phone app.
- Learners can then use their skills developed to create a user interface. They can use their peers to act as potential users in order to gain feedback. Their peers can use their prototype and give feedback, which can then be used to update the user interface.

**Evidence**

Evidence must fully meet the requirements of the assessment criteria and could include:

- a user interface, this could be in the form of a user interface for a database, website or a mobile phone app
- a written document detailing their strengths and weaknesses.

The user interface should focus purely on the overall look and feel and the user navigation methods. There is no need to make use of data processing tools.

## Assessment criteria

The assessment criteria determine the standard required to achieve the component.

| Level 1 Pass | Level 1 Merit | Level 2 Pass | Level 2 Merit | Level 2 Distinction |
|---|---|---|---|---|
| **Learning aim A: Investigate user interface design for individuals and organisations** | | | | |
| **A.1P1** Identify design principles used in two different types of user interface, with an example for each interface.<br>**A.1P2** Identify ways that the user interfaces meet user needs, with one example for each interface. | **A.1M1** Describe the design principles used in two different types of user interface, with some examples for each interface.<br>**A.1M2** Describe ways that the user interfaces meet user needs, with some examples. | **A.2P1** Explain how two different types of user interface meet design principles, with some relevant examples.<br>**A.2P2** Explain how the user interfaces meet user needs, with some relevant examples. | **A.2M1** Analyse how two different types of user interface meet the design principles and user needs, with relevant detailed examples. | **A.2D1** Assess how effectively two different types of user interface meet the design principles and user needs, with justified examples. |

| Learning aim B: Use project planning techniques to plan and design a user interface | | | | |
|---|---|---|---|---|
| **B.1P3** Create a project plan for the design of a user interface that makes limited use of some project planning techniques.<br>**B.1P4** Create an initial design that meets some user requirements but is limited in most aspects. | **B.1M3** Create a project plan for the design of a user interface that makes some relevant use of project planning techniques.<br>**B.1M4** Create an initial design that meets some user requirements. | **B.2P3** Create an appropriate project plan for the design of a user interface that makes relevant use of project planning techniques.<br>**B.2P4** Create a detailed initial design that shows how it meets most user requirements. | **B.2M2** Create an appropriate project plan for the design of a user interface that makes effective use of project planning techniques and create a detailed and considered initial design that shows how it meets most user requirements. | **B.2D2** Create an appropriate project plan for the design of a user interface that makes full and effective use of project planning techniques and create a comprehensive initial design that shows how it meets all user requirements. |



 

| **Learning aim C: Develop and review a user interface** | | | | |
|---|---|---|---|---|
| **C.1P5** Use their plan to develop a user interface that shows limited features and which does not take user feedback into account.<br>**C.1P6** Identify one strength and one weakness of both their user interface and project plan. | **C.1M5** Use their plan to develop and refine a user interface that shows limited features, using feedback to make limited changes.<br>**C.1M6** Describe strengths and weaknesses of both their user interface and project plan, with some examples of each. | **C.2P5** Use their plan to develop and refine an appropriate user interface, using feedback to make some changes.<br>**C.2P6** Explain the strengths and weaknesses of both their user interface and project plan, summarising decisions made. | **C.2M3** Use their plan to develop and refine an effective user interface that shows most features and analyse the strengths and weaknesses of their user interface and project plan, discussing decisions made. | **C.2D3** Use their plan to develop and refine an effective user interface that shows all features and assess the strengths and weaknesses of their user interface and project plan, justifying decisions made. |

| **Level 1 Pass** | **Level 1 Merit** | **Level 2 Pass** | **Level 2 Merit** | **Level 2 Distinction** |
|---|---|---|---|---|
| **Overall component grade** | | | | |
| Learner evidence satisfies all Level 1 Pass criteria | Learner evidence satisfies **either**:<br>all Level 1 Merit criteria<br>**or**<br>All Level 1 Pass criteria **and** C.2P5, C.2P6 | Learner evidence satisfies all Level 2 Pass criteria | Learner evidence satisfies **either**:<br>all Level 2 Merit criteria<br>**or**<br>All Level 2 Pass criteria **and** C.2D3 | Learner evidence satisfies all Level 2 Distinction criteria |

To be given a unit grade, a learner must complete assignments for all learning aims. Please refer to *Section 5* for further guidance on internal assessment, including how to apply criteria to evidence at Level 1 and Level 2.

## Essential information for assessment decisions

Assessors must take account of these definitions and examples in reaching assessment decisions.

### Learning aim A: Investigate user interface design for individuals and organisations

**Evidence for the assignment:** learners will produce a written document, report or presentation demonstrating how user interfaces meet different user needs and design principles. At Level 2, learners will be able to say how two different types of interface meet a range of specific user needs and design principles. They will explore the relationship between design principles and how they can be used to meet user needs. At Level 1, learners will be able to say how each user interface meets the needs of users and design principles in general terms but their descriptions may be limited and not always be appropriate.

**For Level 2 Distinction:** learners will carefully consider how effectively two different types of user interface meet a wide range of user interface design principles. They will be critical in their assessment of each user interface and will assess the positive and negative effects that each design principle has on the user and their ability to positively interact with the device using detailed relevant examples.

Learners will assess:

- to what extent both user interfaces meet specific user needs and support users with different accessibility needs, skill levels and demographics
- to what extent each user interface matches user perceptions and retains user attention
- the suitability of the chosen type of user interface and explore alternatives
- their reasons as to why an alternative type of user interface would or would not better meet the user needs
- how intuitive the user interface is and how it could be developed further to better meet the needs of users
- the different techniques that have been used to allow the user to use the interface efficiently, using detailed examples. For example, learners may assess how the use of keyboard shortcuts and making buttons more distinguishable/bigger improves and reduces selection time.

The link between design principles and meeting user needs is to be explored throughout learners' work.

**For Level 2 Merit:** learners will analyse in detail how two different types of user interface meet a range of user interface design principles. They will consider the positive and negative effects that each design principle has on the user, using detailed examples.

Learners will analyse:

- to what extent both user interfaces meet specific user needs including users with different accessibility needs and skill levels
- how effectively each user interface matches user perceptions and how intuitive the user interface is using detailed examples
- the features of the chosen type of user interface and how they are used to meet user needs
- the different techniques that have been used to allow the user to efficiently use the interface using detailed examples.

The link between design principles and meeting user needs is explored in the majority of their work.

 

**For Level 2 Pass:** learners will explain how two different types of user interface meet user interface design principles. They will pick out a range of different relevant examples of where specific design principles have been used and provide comments as to why they are suitable. Learners explain each design principle in isolation, without explaining how they impact on the overall interface.

Learners will explain:

- how each user interface meets different user needs
- how user needs are met in broader terms, using relevant examples to support their arguments.

The link between design principles and meeting user needs is inconsistent throughout the learner's work.

**For Level 1 Merit:** learners will describe how two different types of user interface meet user interface design principles. Learners will pick out some examples of where design principles have been used but provide limited or no reasons as to why they are suitable. Learners describe each design principle in isolation across the user interface.

Learners will describe how:

- each user interface meets user needs
- user needs are met in broad terms, using some examples.

Not all examples will be relevant.

**For Level 1 Pass:** learners will identify how two different types of user interface meet user interface design principles. They will pick out one example of where design principles have been used in each interface and provide brief information but will not comment as to why they are appropriate.

Learners will identify:

- how each user interface meets user needs in broad terms, using two brief examples.

The examples given may not be relevant to the user interface.

## Learning aim B: Use project planning techniques to plan and design a user interface

**Evidence for the assignment:** learners will select and use a variety of project planning tools to plan out the different parts of their project. They will then put together a design specification that shows an initial design of a user interface that meets both user requirements and design principles. Their initial design should show the designs for at least four different screens in their user interface.

Learners are not allowed to use the dashboard they created in component two as evidence of creating a user interface. Learners are required to design, create and refine a different user interface to meet a different set of user requirements.

At Level 2, learners will be able to select appropriate project planning tools and be able to comment as to why they are suitable. They will include all major parts of their project plan, including timescales, constraints and contingencies. Learners will put together a comprehensive design specification. Their designs will be effective and cover the vast majority of elements. Learners will use different design principles effectively to design an effective and efficient solution.

At Level 1, learners will use project planning tools, however these may not always be suitable. They will plan some aspects although they are likely to overlook key elements. Learners will put together a limited design specification that is likely to be limited to how the user interface will look. Not all of their design choices will be suitable.

**For Level 2 Distinction:** learners make full and effective use of project planning techniques. Learners will set SMART aims and objectives for their project. They will provide a comprehensive range of project requirements, including all user requirements, input requirements, output requirements and user accessibility requirements.

In their plan they will provide evidence of:

- the use of suitable project planning tools to plan their timescales, including when tasks and sub-tasks will be completed
- key milestones, including when reviews will be completed with the user
- project constraints and potential risks that could affect the project and they will put together a comprehensive contingency plan, for example learners will show which tasks will be affected if other tasks are delayed
- which methodology they used to develop their plan and justify why it is the most appropriate.

In their design, they will provide evidence of the following:

- a comprehensive initial design of their user interface for at least four screens. Their initial design will meet all user requirements, input and output requirements and user accessibility needs
- a range of methods that show in thorough detail the visualisation of the user interface and comprehensive details of what hardware and software is required to create the user interface
- an effective test strategy, outlining what methods they will use to test their user interface.

**For Level 2 Merit:** learners make effective use of project planning techniques. The aims and objectives they set will mostly be SMART. They will define most of the project requirements, including most of the user requirements, input requirements, output requirements and user accessibility requirements.

In their plan they will provide evidence of:

- the use of using suitable project planning tools to plan out their timescales, including when tasks and sub-tasks will be completed
- some key milestones in their project, including when a review will be completed with the user; project constraints and potential risks they may face
- which methodology they used to develop their plan, explaining reasons why it is the most appropriate.

In their design, they will provide evidence of the following:

- a detailed and considered comprehensive initial design of their user interface for at least four screens. Their initial design will meet most of the user requirements, input and output requirements and user accessibility requirements
- a range of methods to show in detail the visualisation of the user interface and detailed information of what hardware and software is required to create the user interface
- a test strategy, outlining some methods they will use to test their user interface.

**For Level 2 Pass:** learners make relevant use of some project planning techniques. Learners will give details of the project aims and objectives although these will not all be SMART. They will define most of the user requirements. They will give the input and output requirements although the level of detail given may be inconsistent.

In their plan they will provide evidence of:

- the use of suitable project planning tools to plan when tasks will be carried out; they will also identify when a review will be completed with the user
- some brief detail of the project constraints.

 

In their design, they will provide evidence of the following:

- a detailed and appropriate initial design of their user interface for at least four screens; their initial design will meet most of the user requirements, input and output requirements
- use of suitable tools to show the different aspects of their design, including the visualisation of the user interface; some details about what hardware and software they will need in order to make the user interface.

The designs will be well organised and easy to follow.

**For Level 1 Merit:** learners will make limited use of some relevant project planning techniques. They will define some of the user requirements but these may appear vague.

In their design they will provide evidence of the following:

- use of project planning techniques to plan when they will complete each task in the project
- a project plan, however it will lack structure and planning decisions will appear unclear.

In their design, they will provide evidence of the following:

- a detailed initial design for at least four screens that meets some of the user requirements. Their design will show the visualisation using some detail
- limited comments about what hardware or software they will need in order make the user interface.

Their designs may lack structure.

**For Level 1 Pass:** learners will make limited use of project planning techniques (for example Gantt charts) although these may not be complete. They will identify some of the user requirements although these may appear vague.

Some of the planning carried out by the learner may not be appropriate.

In their design they will provide evidence of the following:

- a limited initial design for at least four screens that meets some of the user requirements; their design will show the visualisation using limited detail.

Their designs may lack structure.

## Learning aim C: Develop and review a user interface

**Evidence for the assignment:** learners will use their plan to create a user interface and assess the strengths and weaknesses of both their project plan and their user interface. The user interface should focus purely on the overall look and feel, and the user navigation methods. There is no requirement to make use of data processing tools.

For example, learners could use:

- database software and make use of form design tools, they could:
  - create customised menus and data input forms
  - make use of buttons to navigate around the user interface
  - change the properties (e.g. on click, on got focus) for different user accessibility needs
  - make use of tip text to display help messages when the user hovers over different items on the screen.
- presentation software and make use of effects, animations and transitions, they could:
  - use drawing tools to create each screen of the user interface
  - use hyperlinks to link to different parts/screens of the user interface
  - use narration tools to read aloud to the user the text that is on the screen
  - use animations to show what happens when different elements of the user interface are interacted with, e.g. use entrance animations to display a green tick when the 'submit' button is pressed.

At Level 2, learners will follow their plan and create an effective user interface that covers all elements of a user interface. This will include the look and feel, and it will demonstrate how the user can input data and how the user interface will respond with outputs. The user interface will meet user requirements and make full and effective use of user feedback in order to make improvements to the design. At Level 1, learners will follow some parts of their plan and create a user interface that shows limited features. This is likely to show how the user interface will look but their design choices will not always be appropriate.

**For Level 2 Distinction:** learners will use their plan to create an effective user interface. All choices made will be appropriate to both the user requirements and the intended device.

The user interface will show comprehensively:

- all features, including the overall look and feel
- how the user inputs data
- how the interface responds and will output to the user
- how the user navigates around the user interface.

All user interactions will match user expectations.

Learners will provide thorough relevant detail on how the user interface is appropriate for the intended device and the impact it will have on the user. All user requirements will have been met. Learners will obtain feedback from potential users and will refine their user interface using an iterative approach. All iterations will clearly improve the effectiveness and efficiency of the user interface. The changes made during each iteration will be well documented.

Learners will assess the strengths and weaknesses of their user interface.

They will include assessment of:

- how the user interface is easy to use and its suitability for the audience and purpose
- how effectively they have made use of different design principles
- how the user interface can be developed further to better meet both user requirements and design principles
- the strengths and weaknesses of their project planning skills; this will include comprehensive detail on effective use of their chosen project planning tools and methodologies, and how relevant they were to the project
- how they overcame project constraints and the impact of using an iterative design approach.

**For Level 2 Merit:** learners will use their plan to create an effective user interface. The vast majority of choices made will be appropriate to both the user requirements and the intended device. The user interface will show in detail:

- a range of features, including the overall look and feel
- how the user inputs data
- how the system responds with outputs
- how the user navigates around the interface.

Learners will provide detail on how the user interface is suitable for the intended device, although the importance of utilising specific device features will not be explored. The vast majority of user requirements will have been met. Learners will obtain feedback from a user and refine their user interface using an iterative process. Most iterations will improve the efficiency and effectiveness of the user interface.

Learners will analyse the strengths and weaknesses of their user interface.

They will include an analysis of:

- how their device is easy to use and how it is suitable for the audience and purpose
- how they have made use of different design principles and include comment on how most of them are effectively used
- how the user interface can be improved further to better meet the needs of the audience and design principles
- the strengths and weaknesses of their chosen project planning tools
- how they overcome the project constraints and the impact of using an iterative design approach.

**For Level 2 Pass:** learners will use their plan to develop an appropriate user interface. The choices they make will be appropriate for the user requirements. They will demonstrate how they incorporated most of the user's requirements within their user interface.

The interface will show:

- the overall look and feel of the user interface
- the navigation methods utilised.

Most of the user requirements will have been met. Learners will obtain feedback from the user and make at least one refinement to their user interface. This will improve the effectiveness but may not improve the efficiency.

Learners will explain the strengths and weakness of their user interface.

They will provide an explanation of:

- ease of use and how the user interface is suitable for the audience and purpose
- how they have made some use of different design principles
- how their user interface can be improved but these aspects may not always be relevant
- the strengths and weaknesses of their project planning tools and provide some detail on how they meet the needs of the task
- some project constraints and how they were overcome.

**For Level 1 Merit:** learners will use their plan to create a limited user interface. Some of the choices made by the learner will be appropriate but not all of them.

The interface will show:

- the overall look and feel of the user interface
- the navigation methods utilised.

The user interface will meet some of the user requirements. Learners will obtain some feedback from the user and they will make simple changes to their user interface. The changes made will not improve the effectiveness or efficiency of the user interface.

Learners will describe the strengths and weaknesses of their user interface.

They will describe:

- how their user interface is easy to use and how it is suitable for the audience and purpose
- some design principles they have used but they may not give reasons as to why they used them
- ways their user interface can be improved but these are not always relevant
- the strengths and weaknesses of their project planning tools and provide some detail on how they have been used, however it will be unclear as to why they were appropriate for the task.

**For Level 1 Pass:** learners will use their plan to create a limited user interface. Some of the choices made by the learner will be appropriate.

The interface will show:

- the overall look and feel.

The user interface will meet some of the user's requirements. Learners will receive some feedback from the users, however they will not refine their interface to take this feedback into account.

Learners will identify:

- a strength and weakness of their user interface
- a strength and weakness of the project planning tools they have used although these are likely to be vague.

## Resource requirements

For this component, learners must have access to*:*

- a range of user interfaces from different applications/devices, for example tablets, watches, software applications, websites, apps
- appropriate application software, for example graphics, word-processing and/or presentation software
- project planning software, for example Microsoft Excel®, Freedcamp, Trello.
- mindmapping software, for example Coggle, FreeMind, MindMaple.

 

# Component 2: Collecting, Presenting and Interpreting Data

Levels: **1/2**

Assessment type: **Internal**

Guided learning hours: **36**

## Component in brief

Learners will understand the characteristics of data and information and how they help organisations in decision making. They will use data manipulation methods to create a dashboard to present and draw conclusions from information.

## Introduction

In order to make decisions, organisations collect vast amounts of data from a range of different sources. They need to use appropriate data-collection methods to ensure that the data is of sufficient quality to enable decision making. Data must then be converted into information to allow it to become useful. In this component, you will learn the different data manipulation tools that can be used to change the way that data is presented. You will provide clear summaries of the data and present them in a dashboard that will allow organisations to make effective decisions.

Even when data has been converted into information, it will not provide any conclusions on its own. It is up to the data user to be able to look at the information and draw conclusions, so how the information is presented is key to ensuring that effective and accurate decisions are made. In this component, you will learn the different presentation features that can be used to ensure that information is understood clearly in an objective way so that it is not misinterpreted.

This component will build on Key Stage 3, where you have learned about how to create programs. This component will help to develop your understanding of how to represent information in different ways to give it more meaning. The component will help you to progress to further vocational or academic qualifications. It will enable you to develop transferable data manipulation tools that you can use to make effective decisions in all areas of study and employment. It will also help you to focus on your chosen specialism in more detail, for example managing big data, business analytics.

## Learning aims

**A** Investigate the role and impact of using data on individuals and organisations

**B** Create a dashboard using data manipulation tools

**C** Draw conclusions and review data presentation methods.

## Teaching content

### Learning aim A: Investigate the role and impact of using data on individuals and organisations

#### A1 Characteristics of data and information

Learners will understand the concepts of data and that data is meaningless without converting it into information by adding structure and context.

- Characteristics of data:
  - no meaning
  - no structure
  - no context
  - unprocessed.
- Characteristics of information:
  - has meaning
  - has structure
  - has context
  - is processed.

#### A2 Representing information

Learners will understand the different ways of representing information and will be able to explain situations where they would be used.

- text
- numbers
- tables
- graphs/charts
- infographics.

#### A3 Ensuring data is suitable for processing

Learners will understand the methods that can be used to ensure data input is suitable and within boundaries so that it is ready to be processed.

- Validation methods:
  - range check
  - type check
  - lookup check
  - data type check
  - presence check
  - length check.
- Verification methods:
  - proofreading
  - double entry.

 

### A4 Data collection

Learners will understand how the data collection method and data collection features affect its reliability.

- Data collection methods:
  - primary data – information collected directly from source
  - secondary data – information collected by third party.
- Data collection features:
  - size of sample
  - who was in the sample
  - where the data was collected
  - when the data was collected
  - methods used.
- Big data:
  - definition of big data – a large collection of data collected from a large number of sources
  - collection of big data, e.g. social networks, shop loyalty schemes, census, sensors, ATM/cash machines, mobile phone networks, Wi-Fi points, digital television, search engine data, e-commerce.

### A5 Quality of information and its impact on decision making

Learners will understand the factors that affect the quality of information and their impact on decision making.

- Quality of information factors:
  - source/collection method
  - accuracy
  - age
  - completeness
  - amount of detail
  - format/presentation
  - volume.

### A6 Sectors that use data modelling

Learners will understand that different types of organisation use data modelling to help make decisions.

- Types of sectors, e.g.:
  - transport
  - education
  - retail
  - banking
  - entertainment
  - government
  - health care
  - construction
  - communication
  - health and safety.

- Data modelling in decision making, e.g.:
  - which customers to target for advertisements
  - where to deploy staff during busy periods
  - just-in-time delivery
  - where and when to adapt transport schedules
  - financial management
  - accident prevention
  - demographic analysis.

### A7 Threats to individuals

Learners will understand the different threats that face individuals who have data stored about them.

- Threats to individuals, e.g.:
  - invasion of privacy
  - fraud
  - targeting vulnerable groups of people
  - inaccurate data could be stored.

## Learning aim B: Create a dashboard using data manipulation tools

### B1 Data processing methods

Learners will understand how data can be imported from an external source. They will then explore how to apply data processing methods. These include:

- data manipulation methods:
  - importing data, e.g. from other files, the internet
  - formulae, e.g. add, divide, subtract, multiply
  - decision-making functions, e.g. IF, WHATIF, SUMIF
  - lookup functions, e.g. VLOOKUP, HLOOKUP
  - string operation functions, e.g. LEFT, RIGHT
  - count functions, e.g. COUNTBLANK, COUNTIF
  - logical operators, e.g. NOT, AND, OR
  - sorting, e.g. sorting multiple columns and values
  - outline, e.g. group, ungroup, subtotal
  - filtering, e.g. greater than, less than, equals, contains, begins with, ends with
  - text to columns, e.g. delimited, fixed width.
- other processing methods:
  - absolute and relative cell referencing, e.g. use of dollar sign ($) and named cells
  - macros, e.g. for automatic navigation, change graph options, change data ranges
  - data validation, e.g. list check, type check, length check
  - multiple and linking worksheets, e.g. for dashboard and raw data
  - cell comments
  - alternative views, e.g. hiding/unhiding cells, freezing planes
  - conditional formatting, e.g. data bars, colour scales, icon sets.

 

### B2 Produce a dashboard

Learners will use a dashboard to select and display information summaries based on a given large data set.

- Show data summaries from the data set:
  - totals
  - counts
  - percentages
  - sales breakdowns
  - departmental breakdown
  - time allocations
  - budget allocations.
- Appropriate presentation methods:
  - form controls, e.g. dropdown menus, spinners, tick boxes, radio buttons
  - graphs/charts, including dynamic charts/graphs
  - pivot tables
  - conditional formatting
  - select data/range.
- Use appropriate presentation features:
  - font size, style and colour
  - cell borders and shading
  - graphics
  - axis labels
  - titles, including overall and section titles.

## Learning aim C: Draw conclusions and review data presentation methods

### C1 Drawing conclusions based on the data

Learners will draw conclusions on the data set, using their dashboard in order to make recommendations.

- Drawing conclusions, e.g.:
  - trends
  - patterns
  - anomalies
  - possible errors.
- Make recommendations, e.g.:
  - which customers/areas to target for advertisements
  - where to deploy staff to deal with increased demands
  - how and when to adapt transport schedules.

### C2 How presentation affects understanding

Learners will assess how well they have used the presentation features listed in B2, to ensure they do not lead to:

- information being misinterpreted
- information being biased
- inaccurate conclusions being made.

## Suggestions for delivery

Successful delivery of this component will allow learners to develop their knowledge and understanding of the role and impact of using data on individuals and organisations. Learners will develop their understanding on using data to ensure that effective and accurate decisions are made. Learners should be able to apply appropriate data manipulation tools to manipulate data and provide clear summaries in the form of a dashboard. They will develop their knowledge and understanding of how the presentation of their dashboard can affect the effectiveness of conclusions made.

You may choose to deliver this component alongside Components 1 and 3. Assignments can focus on each learning aim or you can combine them within or across components.

## Essential information for setting assignments

The recommended structure for setting assignments is one for each learning aim, however you may combine learning aims within or across components. Suggested examples of how assignments may be set are outlined here. You should also refer to the authorised assignment briefs on our website. See *Section 5* for more information.

**Learning aim A: Investigate the role and impact of using data on individuals and organisations**

**Description**

Learners will be given a scenario outlining the data collected in two different sectors (not the data itself). The scenario will outline the data collection methods and features.

Learners will assess:

- how the data collection method (for example primary and secondary) and the data collection features (for example sample size, who was in the sample, when and where the data was collected) affect the quality of the data
- how the quality of data affects decision making across two different sectors (for example transport, education).

**Example task(s)**

- Learners will explore the data collection methods for two different sectors.
- Learners will assess how the data collection methods and features affect the quality of the data.
- Learners will assess how the data collection methods and quality of data affect decision making in two sectors.

**Evidence**

Evidence must fully meet the requirements of the assessment criteria and could include:

- a written document or a presentation (with speaker notes), assessing how the data collection methods affect the quality of data and decision making.

 

**Learning aim B: Create a dashboard using data manipulation tools**

**Description**

Learners will be provided with a large data set, which they will import into spreadsheet software.

Learners will:

- select and apply the data manipulation methods listed in B1 to manipulate data in order to provide appropriate summaries of the data
- produce a dashboard to display the summaries of data using appropriate presentation features and presentation methods.

**Example task(s)**

- Learners will select and use methods to capture and manipulate data such as importing data, using functions, sorting, conditional formatting etc.
- Learners will select and use presentation methods and features to show their data in a dashboard.
- Learners will use their spreadsheet skills to manipulate data and create an effective dashboard using appropriate presentation methods and features.

**Evidence**

Evidence must fully meet the requirements of the assessment criteria and could include:

- a spreadsheet showing the imported dataset, the data manipulation methods used and a completed dashboard
- a written document containing screenshots that show the manipulation methods used and a completed dashboard
- annotated screenshots of the completed dashboard and dataset, outlining the choice of presentation features and the data manipulation tools used
- a printout of the final dashboard created.

| **Learning aim C: Draw conclusions and review data presentation methods** |
| --- |
| **Description**<br>Learners will use their dashboard to draw conclusions and make appropriate recommendations. They will assess how the presentation features used in their dashboard affect how well the information is understood.<br>**Example task(s)**<br>• Learners will use their dashboard to:<br>o identify patterns and trends in the data<br>o draw conclusions on patterns and trends in the data and then make recommendations<br>o assess how effective the presentation of the data on the dashboard is.<br>**Evidence**<br>Evidence must fully meet the requirements of the assessment criteria and could include:<br>• a written document that shows the drawing of conclusions and recommendations made, and assessment of how the presentation of the dashboard influences its effectiveness. |

 

## Assessment criteria

The assessment criteria determine the standard required to achieve the component.

| Level 1 Pass | Level 1 Merit | Level 2 Pass | Level 2 Merit | Level 2 Distinction |
|---|---|---|---|---|
| **Learning aim A: Investigate the role and impact of using data on individuals and organisations** | | | | |
| **A.1P1** Identify data collection methods across two sectors.<br>**A.1P2** Identify data that is used to make decisions across two different sectors. | **A.1M1** Describe data collection methods across two sectors.<br>**A.1M2** Describe data that is used to make decisions across two sectors. | **A.2P1** Explain how data collection methods and their features affect the quality of data across two sectors, with relevant examples.<br>**A.2P2** Explain how data is used to make decisions across two sectors, with relevant examples. | **A.2M1** Discuss data collection methods and features used and how they affect the quality of data and decision making in two sectors, drawing justified conclusions. | **A.2D1** Assess data collection methods and features used and how they affect the quality of data and decision making in two sectors, drawing detailed justified conclusions. |
| **Learning aim B: Create a dashboard using data manipulation tools** | | | | |
| **B.1P3** Use methods to carry out limited manipulation of data, with a limited degree of accuracy.<br>**B.1P4** Produce a dashboard that produces a limited summary of data. | **B.1M3** Use methods to carry out some manipulation of data, with some inaccuracies.<br>**B.1M4** Produce a dashboard that produces a limited summary of data, with some appropriate presentation methods. | **B.2P3** Select and use methods to carry out some manipulation of data, which is largely accurate.<br>**B.2P4** Produce an appropriate dashboard that clearly summarises data. | **B.2M2** Select and use relevant methods to effectively and accurately manipulate data and produce an effective dashboard that clearly summarises data. | **B.2D2** Select and use relevant methods to effectively and accurately manipulate data and produce a fully efficient and comprehensive dashboard. |

| **Learning aim C: Draw conclusions and review data presentation methods** | | | | |
|---|---|---|---|---|
| **C.1P5** Use the dashboard to identify trends in the data.<br>**C.1P6** Identify the methods used to present data. | **C.1M5** Use the dashboard to outline some trends in the data.<br>**C.1M6** Describe the methods used to present data so that it can be understood, with brief examples. | **C.2P5** Use the dashboard to draw conclusions, with some appropriate recommendations.<br>**C.2P6** Explain the methods used to present data so that it can be clearly understood, with detailed examples. | **C.2M3** Analyse how the dashboard's presentation of data influences the conclusions drawn and the recommendations made, using relevant examples. | **C.2D3** Assess the effectiveness of the dashboard's presentation of data and how it affects the conclusions drawn and the recommendations made, using justified examples. |

| **Level 1 Pass** | **Level 1 Merit** | **Level 2 Pass** | **Level 2 Merit** | **Level 2 Distinction** |
|---|---|---|---|---|
| **Overall component grade** | | | | |
| Learner evidence satisfies all Level 1 Pass criteria | Learner evidence satisfies **either**:<br>all Level 1 Merit criteria<br>**or**<br>all Level 1 Pass criteria **and** C.2P5, C.2P6 | Learner evidence satisfies all Level 2 Pass criteria | Learner evidence satisfies **either**:<br>all Level 2 Merit criteria<br>**or**<br>all Level 2 Pass criteria **and** C.2D3 | Learner evidence satisfies all Level 2 Distinction criteria |

To be given a unit grade, a learner must complete assignments for all learning aims. Please refer to *Section 5* for further guidance on internal assessment, including how to apply criteria to evidence at Level 1 and Level 2.

 

## Essential information for assessment decisions

Assessors must take account of these definitions and examples in reaching assessment decisions.

### Learning aim A: Investigate the role and impact of using data on individuals and organisations

**Evidence for the assignment:** learners will provide a written document showing an understanding of how two different sectors use data to make decisions. This will include how the data collection methods and its features affect the quality of information. At Level 2, learners will be able to provide relevant examples in the context of each sector. They will be able to make a link between the data collection methods used and how these can affect the data. Learners will be able to make a direct link between the collection methods/features and how they affect the quality of data. At Level 1, learners will focus more on how each sector uses data and may not be able to provide relevant examples. They may not be able to make a direct link between the data collection method and how it affects the quality of data.

**For Level 2 Distinction:** learners will assess in comprehensive detail how data is used across two different sectors in order to make decisions.

Their assessment will:

- be specific in what data organisations need in order to make decisions and give a wide range of relevant examples to the context; each example will be comprehensively justified
- include comprehensive detail as to how both primary and secondary data collection methods affect the data (e.g. sample size, who is asked). There will be a range of relevant examples; each example will be comprehensively justified
- explore the link between the data collection methods and features, and how they impact on the quality of data throughout.

**For Level 2 Merit:** learners will discuss in detail how data is used across two different sectors to make decisions. They will identify specific information and discuss how the sector uses that information to make decisions.

Their discussion will:

- provide a range of relevant examples to support their arguments
- detail how both primary and secondary data collection methods affect their features; they will provide a range of relevant examples to support their arguments
- explore the link between the data collection methods and features and how they impact on the quality of data in most examples.

**For Level 2 Pass:** learners will explain in some detail how data is used across two different sectors. Learners will identify specific information and explain how the sector uses that information to make decisions.

Their explanation will:

- provide relevant examples to support their arguments
- show how both primary and secondary data collection methods affect their features, using some detail; they will provide mostly relevant examples
- show the link between the data collection methods and features, and their impact on the quality of data will be explained in some examples.

**For Level 1 Merit:** learners will describe data that is used across two different sectors to make decisions. They will provide some examples although these may not always be relevant to the scenario. They will describe the data collection methods and features used in different sectors. They will not cover a full range of methods and features but will describe some which are relevant to the scenario.

**For Level 1 Pass:** learners will identify data that is used across two different sectors to make decisions. They will provide few or no examples to support their arguments. They will identify the data collection methods and features used in different sectors. They will not cover a full range of methods and features and those identified may not be relevant to the scenario.

## Learning aim B: Create a dashboard using data manipulation tools

**Evidence for the assignment:** learners will be able to select and use different data manipulation tools to manipulate the data in a large data set and produce data summaries. They will then show their data summaries on a dashboard.

For example, learners could import datasets about:

- **transport** – learners could use historic road safety and accident data to see if accidents increase:
  - in different months of the year
  - at different times of the day
  - on different types of road (e.g. motorways, dual carriageways)
  - in different speed limit zones (e.g. 20 mph, 70 mph)
  - in different weather conditions (e.g. rain, frost).
- **the environment** – learners could use data about the volume of litter to determine if the amount of litter is affected by the:
  - area of the UK (e.g. North West, East Midlands)
  - type (e.g. footpaths, back alleys)
  - month of the year
  - number of fines issued in each cost group (e.g. £0 to £50, £51 to £200).
- **weather** – learners could use historic data to look for patterns and trends in the weather over time, including:
  - average temperature
  - average rainfall.

Learners could then combine this data with data from other datasets to determine if the weather had an impact on the:

- number of road accidents
- average retail sales
- amount of crime
- hospital visits/waiting times.

At Level 2, learners will be able to select and use appropriate and efficient data manipulation tools. They will use a full range of different presentation methods and features to create an effective dashboard. At Level 1, learners will use data manipulation tools, although these may not always be efficient. They will be able to state some reasons as to why these tools have been used. They will make some use of different presentation features but there are likely to be some weaknesses.

**For Level 2 Distinction:** learners will select and use effectively relevant data manipulation methods. They will use data manipulation methods with accuracy to manipulate a range of data. Learners will make efficient use of the data manipulation methods throughout their solution. This includes the use of complex functions (for example decision-making functions, string operation functions, lookup functions). The methods selected by learners will be comprehensively justified.

Learners will provide a fully efficient and effective dashboard. This will:

- have a wide range of clear summaries of their manipulated data
- incorporate a wide range of appropriate presentation methods, including a range of different charts/graphics, tables, pivot tables and conditional formatting
- have presentation methods that are appropriate for the data being shown
- use suitable presentation features to create an effective dashboard that clearly summarises data
- include suitable use of titles, labels, graphics and a range of formatting features
- make use of automated features (e.g. buttons/macros, dropdown menus) to show some different aspects of the data on their dashboard. For example, learners could have a dropdown menu to show data from a range of different areas of their dataset.

**For Level 2 Merit:** Learners will select and use relevant data manipulation tools. Learners will accurately manipulate a range of data. They will make efficient use of data manipulation tools in the vast majority of places. This includes the use of advanced functions (for example decision-making functions, count function).

Learners will provide an efficient dashboard. This will:

- have a range of clear summaries of their manipulated data
- incorporate a range of appropriate presentation methods. This will include using a range of different charts/graphs, tables, pivot tables and conditional formatting; these will be used appropriately in the vast majority of places
- use suitable presentation features on their dashboard in the vast majority of places to communicate effective information
- make use of suitable titles, labels, graphics and formatting features
- make use of some automated features (e.g. buttons/macros, dropdown menus) to show a different aspect of the data. For example, learners could have a dropdown menu to show data from a different day/time.

**For Level 2 Pass:** learners will select and use some data manipulation methods. This includes the use of advanced functions (for example decision-making functions, count function). The methods used by learners will mostly be relevant. The tools selected will be mostly efficient however some alternative tools may have provided a more efficient approach. The data manipulated by learners will be largely accurate.

Learners will provide an appropriate dashboard. This will:

- have clear summaries of their manipulated data
- incorporate mostly appropriate presentation methods, including different charts/graphs and tables
- some presentation methods used will be appropriate for the data being shown
- make use of suitable presentation features on their dashboard in most places; this will include suitable use of titles, labels, graphics and formatting features in most places.

**For Level 1 Merit:** learners will select and use data manipulation methods although these are not always relevant. Learners are likely to have used simple arithmetic functions (for example SUM, MIN, MAX). Learners will carry out some manipulation of data with some inaccuracies. The data manipulation tools they select will be efficient in some places although alternative tools would provide a more efficient approach.

Learners will produce a dashboard to show limited summaries of data. This will:

- use some appropriate presentation methods, including a range of different graphs/charts and tables
- use limited presentation methods appropriate for the data being shown
- make some use of titles, labels, graphics and formatting features. There will be some weaknesses in the presentation methods features used, which will lead to the data being displayed in a way that is not easy to understand.

**For Level 1 Pass:** learners will use data manipulation methods to carry out limited manipulation of data. They are likely to have used simple arithmetic functions (for example SUM, MIN, MAX). Learners will carry out limited manipulation of data with a limited degree of accuracy. The data manipulation tools they select will be mostly inefficient and other tools available would have provided a more efficient approach.

Learners will produce a dashboard to show a limited summary of data. This will:

- make limited use of presentation methods
- make some use of different charts/graphs and tables although these may not always be appropriate for the data being shown
- include weaknesses in the presentation of the data.

## Learning aim C: Draw conclusions and review presentation methods

**Evidence for the assignment:** learners will be able to use their dashboard to make conclusions and recommendations. They will show understanding of how the presentation features affected the conclusions and recommendations made. At Level 2, learners will be able to use their dashboard effectively to make relevant and specific conclusions. They will then be able to use their conclusions to make appropriate recommendations. They will show full awareness of how the presentation methods used lead to data not being biased, misunderstood or being used to make inaccurate decisions. At Level 1, learners will be able to use their dashboard to make some conclusions but they may not always be relevant. They are likely to provide few or no recommendations. They are likely to show limited understanding of how the presentation methods they have used allow their dashboard to be used to make accurate decisions.

**For Level 2 Distinction:** learners will use their dashboard to draw a range of specific, relevant and well justified conclusions. This will include trends, patterns and possible errors.

They will:

- provide specific, appropriate and effective recommendations based on their conclusions in thorough detail
- use their dashboard to give a wide range of relevant examples to support their conclusions and recommendations.

They will assess:

- the effectiveness of the presentation of their dashboard and how it affected the conclusions drawn and recommendations made
- how they have used appropriate presentation features to ensure the information on their dashboard was not biased, misunderstood or used to make inaccurate decisions.

 

**For Level 2 Merit:** learners will use their dashboard to draw specific and relevant conclusions. This will include trends, patterns and possible errors.

They will:

- provide specific and appropriate recommendations based on their conclusions in detail
- use their dashboard to give a range of relevant examples to support their conclusions and recommendations.

They will analyse:

- how the presentation of their dashboard influenced conclusions drawn and recommendations made
- how they have used appropriate presentation features to ensure the information on their dashboard was not biased, misunderstood or used to make inaccurate decisions.

**For Level 2 Pass:** learners will use their dashboard to make some relevant conclusions in some detail. These will mostly be specific to their dashboard and include trends and patterns.

They will:

- provide some appropriate recommendations and these will mostly be relevant.

They will explain:

- the presentation methods used on their dashboard and how they lead to accurate conclusions being made.

**For Level 1 Merit:** learners will use their dashboard to outline trends in the data set.

They will:

- briefly describe some trends based on their data set.

They will describe:

- the presentation methods they have used on their dashboard and be able to describe how their dashboard could be used to make decisions.

**For Level 1 Pass:** learners will use their dashboard to identify trends, which are likely to be in the form of general statements that may not relate clearly to the dashboard.

They will:

- identify limited trends based on their data set.

They will:

- identify the presentation methods they have used on their dashboard but will not show awareness of how the presentation methods used impacts on the decisions made.

## Resource requirements

For this component, learners must have access to*:*

- scenarios outlining the data collected in two different sectors
- a preselected big data set
- spreadsheet software.

# Component 3: Effective Digital Working Practices

Levels: **1/2**

Assessment type: **External**

Guided learning hours: **48**

## Component in brief

Learners will explore how organisations use digital systems and the wider implications associated with their use.

## Introduction

Modern organisations are increasingly reliant on the use of digital systems to complete every day, business-critical tasks. The development of these systems has presented organisations with many opportunities to work in new, inventive and flexible ways to achieve their aims. The systems have also brought new challenges and a range of responsibilities.

This component will give you an opportunity to explore how the developments in technology over recent years have enabled modern organisations to communicate and collaborate more effectively than ever before. The component is designed to allow you to explore the digital systems available to organisations and how their features have an impact on the way organisations operate. You will explore how developments in technology have led to more inclusive and flexible working environments, and how regulation and ethical and security concerns influence the way in which organisations operate.

You will analyse information in a range of vocational contexts so that you develop a greater understanding of the use of digital systems by organisations and so that you are able to make reasoned judgements on the systems. This component builds on Key Stage 3 where you will have learned how to use technology responsibly. In this component, you will learn about how organisations can use technology safely and about the cyber security issues when working in a digital organisation. The knowledge and skills you develop in this unit will give you a basis for further study in a range of subject areas, including computing, IT, engineering, creative and scientific, or you may go on to an apprenticeship or entry-level employment where your understanding of technology will be relevant.

## Summary of assessment

This external component builds on knowledge, understanding and skills acquired and developed across the qualification. It requires learners to select and integrate knowledge and understanding synoptically from all components. It is assessed through an external assessment that is set and marked by Pearson. Questions will require learners to apply knowledge and understanding to the given scenarios or context. The external assessment will include questions totalling 60 marks. The test duration is 1 hour 30 minutes. Assessment availability is twice a year: February and May from 2020 onwards. Sample assessment materials will be available to help centres prepare learners for assessment.

## Assessment objectives

**AO1** Demonstrate knowledge of facts, terms, processes and issues in relation to digital information technology

**AO2** Apply an understanding of facts, terms, processes and issues in relation to digital information technology

**AO3** Analyse, evaluate and make reasoned judgements about the use, factors and implications influencing digital information technology

**AO4** Make connections with the concepts, issues, terms and processes in digital information technology

 

# Essential content

## A Modern technologies

Learners should learn about how current and modern technologies are used by and have an impact on organisations and their stakeholders. Learners need to know the ways in which organisations and associated individuals use modern technologies to exchange information, communicate, and complete work-related tasks. Learners must be able to apply their knowledge to a range of vocational contexts.

### A1 Modern technologies

Understand how and why modern technologies are used by organisations and stakeholders to access and manipulate data, and to provide access to systems and tools in order to complete tasks. Learners should understand the implications of these tools and technologies for organisations and stakeholders.

- Communication technologies:
  - setting up ad hoc networks (open Wi-Fi, tethering/personal hotspot)
  - security issues with open networks
  - performance issues with ad hoc networks
  - issues affecting network availability (rural vs city locations, developed vs developing countries, available infrastructure, mobile network coverage, blackspots).
- Features and uses of cloud storage:
  - setting and sharing of access rights
  - synchronisation of cloud and individual devices
  - availability (24/7)
  - scalability (getting more by renting/freeing to save money).
- Features and uses of cloud computing:
  - online applications
  - consistency of version between users (features, file types)
  - single shared instance of a file
  - collaboration tools/features.
- How the selection of platforms and services impacts on the use of cloud technologies:
  - number and complexity of features
  - paid for versus free
  - interface design (layout, accessibility, mobile vs desktop)
  - available devices.
- How cloud and 'traditional' systems are used together:
  - device synchronisation
  - online/offline working
  - notifications.
- Implications for organisations when choosing cloud technologies:
  - consideration of disaster recovery policies (service provider's, organisation's)
  - security of data (location, service provider's security procedures and features)
  - compatibility
  - maintenance (software updates, downtime, staff expertise)
  - getting a service/storage up and running quickly
  - performance considerations (responsiveness to user, complexity of task, available devices and communication technologies).

## A2 Impact of modern technologies

Learners should understand how modern technologies impact on the way organisations perform tasks. Learners should understand how technologies are used to manage teams, to enable stakeholders to access tools and services, and to communicate effectively. Learners should understand the positive and negative impact that the use of modern technologies has on organisations and stakeholders.

- Changes to modern teams facilitated by modern technologies:
  - world teams (not bound by geographical restrictions, diversity)
  - multicultural
  - inclusivity (facilitation of member's needs)
  - 24/7/365 (no set work hours, team members in different time zones)
  - flexibility (remote working vs office based, permanent vs casual staff).
- How modern technologies can be used to manage modern teams:
  - collaboration tools
  - communication tools
  - scheduling and planning tools.
- How organisations use modern technologies to communicate with stakeholders:
  - communication platforms (website, social media, email, voice communication)
  - selection of appropriate communication channels (private/direct message, public status update) for sharing information, data and media.
- How modern technologies aid inclusivity and accessibility:
  - interface design (layout, font and colour selection)
  - accessibility features (screen reader support, alt text, adjustable typeface/font size, text to speech/'listen to this page')
  - flexibility of work hours and locations.
- Positive and negative impacts of modern technologies on organisations in terms of:
  - required infrastructure (communication technologies, devices, local and web-based platforms)
  - demand on infrastructure of chosen tools/platforms
  - availability of infrastructure
  - 24/7 access
  - security of distributed/disbursed data
  - collaboration
  - inclusivity (age, health, additional needs, multicultural)
  - accessibility (meeting legal obligations, provision requirements)
  - remote working.
- Positive and negative impacts of modern technologies on individuals:
  - flexibility (home/remote working)
  - working styles (choice of time, device, location)
  - impact on individual mental wellbeing (depression, loneliness, self-confidence, separation from stressful environment, feel in control of own schedule, schedule adjusted to meet needs of family, less time commuting).

 

## B Cyber security

Learners must understand how the increased reliance of organisations on digital systems to hold data and perform vital functions presents a range of challenges and dangers. They should understand the nature of threats to digital systems and ways that they can be mitigated through organisation policy, procedures and the actions of individuals. They should be able to apply knowledge of cyber security to a range of vocational contexts.

### B1 Threats to data

Learners should understand why systems are attacked, the nature of attacks and how they occur, and the potential impact of breaches in security on the organisation and stakeholders.

- Why systems are attacked:
  - fun/challenge
  - industrial espionage
  - financial gain
  - personal attack
  - disruption
  - data/information theft.
- External threats (threats outside the organisation) to digital systems and data security:
  - unauthorised access/hacking (black hat)
  - malware (virus, worms, botnet, rootkit, Trojan, ransomware, spyware)
  - denial of service attacks
  - phishing (emails, texts, phone calls)
  - pharming
  - social engineering
  - shoulder surfing
  - 'man-in-the-middle' attacks.
- Internal threats (threats within the organisation) to digital systems and data security:
  - unintentional disclosure of data
  - intentional stealing or leaking of information
  - users overriding security controls
  - use of portable storage devices
  - downloads from internet
  - visiting untrustworthy websites.
- Impact of security breach:
  - data loss
  - damage to public image
  - financial loss
  - reduction in productivity
  - downtime
  - legal action.

### B2 Prevention and management of threats to data

Learners should understand how different measures can be implemented to protect digital systems. They should understand the purpose of different systems and how their features and functionality protect digital systems. Learners should understand how one or more systems or procedures can be used to reduce the nature and/or impact of threats.

- User access restriction:
  - physical security measures (locks)
  - passwords
  - using correct settings and levels of permitted access
  - biometrics
  - two-factor authentication (who you are, what you know, what you have).
- Data level protection:
  - firewall (hardware and software)
  - software/interface design (obscuring data entry, autocomplete, 'stay logged in')
  - anti-virus software
  - device hardening
  - procedures for backing up and recovering data
  - encryption of stored data (individual files, drive)
  - encryption of transmitted data.
- Finding weaknesses and improving system security:
  - ethical hacking (white hat, grey hat)
  - penetration testing
  - analyse system data/behaviours to identify potential risks.

### B3 Policy

Learners should understand the need for and nature of security policies in organisations. They should understand the content that constitutes a good security policy and how it is communicated to individuals in an organisation. To ensure that potential threats and the impact of security breaches are minimised, learners should understand how procedures in security policies are implemented in organisations.

- Defining responsibilities:
  - who is responsible for what
  - how to report concerns
  - reporting to staff/employees.
- Defining security parameters:
  - password policy
  - acceptable software/installation/usage policy
  - parameters for device hardening.
- Disaster recovery policy:
  - who is responsible for what
  - dos and don'ts for staff
  - defining the backup process (what is backed up, scheduling, media)
  - timeline for data recovery
  - location alternative provision (hardware, software, personnel).
- Actions to take after an attack:
  - investigate (establish severity and nature)
  - respond (inform/update stakeholders and appropriate authorities)
  - manage (containment, procedures appropriate to nature and severity)
  - recover (implement disaster recovery plan, remedial action)
  - analyse (update policy and procedures).

 

## C The wider implications of digital systems

Learners should understand the wider implications of digital systems and their use. Learners should understand how legislation covering data protection, computer crimes and intellectual property has an impact on the way that organisations and individuals use digital systems and data. Learners should understand the procedures that organisations must follow in order to conform to legal requirements and professional guidelines.

### C1 Responsible use

Learners should consider the responsible use of digital systems, including how systems and services share and exchange data as well as the environmental considerations of increased use.

- Shared data (location-based data, transactional data, cookies, data exchange between services):
  - benefits of using shared data
  - drawbacks of using shared data
  - responsible use (legal considerations, privacy, ethical use).
- Environmental:
  - impact of manufacturing, use, and disposal of it systems (energy, waste, rare materials)
  - considerations when upgrading or replacing digital systems
  - usage and settings policies (auto power off, power-saving settings, hard copy vs electronic distribution).

### C2 Legal and ethical

Learners should understand the scope and purpose of legislation (valid at time of delivery) that governs the use of digital systems and data, and how it has an impact on the ways in which organisations use and implement digital systems. Learners should understand the wider ethical considerations of use of technologies, data and information, and organisations' responsibilities to ensure that they behave in an ethical manner.

- Importance of providing equal access to services and information:
  - benefits to organisations, individuals and society
  - legal requirements
  - professional guidelines/accepted standards.
- Net neutrality and how it impacts on organisations.
- The purpose and use of acceptable use policies:
  - scope – who the document applies to
  - assets – the equipment, documents, and knowledge covered by the policy
  - acceptable – behaviours that are expected/required by an organisation
  - unacceptable – behaviours that are not allowed by an organisation
  - monitoring – description of how behaviour is monitored by an organisation
  - sanctions – defining the processes and potential sanctions if unacceptable behaviour occurs
  - agreement – acknowledge (sign, click) that an individual agrees to abide by the policy.
- Blurring of social and business boundaries:
  - use of social media for business purposes
  - impact of personal use of digital systems (social media, web) on professional life.

- Data protection principles:
  - lawful processing
  - collected only for specific purpose
  - only needed information is collected
  - should be accurate
  - kept only as long as is necessary
  - data subject rights
  - protected
  - not transferred to countries with less protection.
- Data and the use of the internet:
  - the right to be forgotten
  - appropriate and legal use of cookies and other transactional data.
- Dealing with intellectual property:
  - the importance of intellectual property in organisations
  - methods of identifying/protecting intellectual property (trademarks, patents copyright)
  - legal and ethical use of intellectual property (permissions, licensing, attribution).
- The criminal use of computer systems:
  - unauthorised access
  - unauthorised modification of materials
  - creation of malware
  - intentional spreading of malware.

## D Planning and communication in digital systems

Learners should understand how individuals in the digital sector plan solutions and communicate meaning and intention. They should understand how different forms of written and diagrammatical communication can be used to express understanding and demonstrate the flow of data and information.

### D1 Forms of notation

Learners should be able to interpret and use standard conventions to combine diagrammatical and written information to express an understanding of concepts.

- Understand how organisations use different forms of notation to explain systems, data and information:
  - data flow diagrams
  - flowcharts
  - system diagrams
  - tables
  - written information.
- Be able to interpret information presented using different forms of notation in a range of contexts.
- Be able to present knowledge and understanding using different forms of notations:
  - data flow diagrams
  - information flow diagrams
  - flowcharts.

 

## Grade descriptors

### Level 1 Pass

Learners can recall, select and demonstrate a basic knowledge and understanding of facts, terms and issues. They can identify key points of simple processes.

Learners are able to apply limited knowledge and understanding of facts, terms, issues and processes to vocational contexts.

Learners make use of basic concepts to make simple descriptive statements about the use of digital systems. They can make partial connections between concepts to make judgements without justification.

### Level 2 Pass

Learners can demonstrate a sound knowledge and understanding of facts, terms and issues. They can identify and describe processes.

Learners are able to apply and communicate their knowledge and understanding of facts, terms, issues and processes. They can solve problems in vocational contexts.

Learners relate their knowledge and understanding to vocational contexts, making some decisions on application and impact.

Learners make use of concepts to make valid evaluative statements about the use of digital systems in vocational contexts. They can make links between concepts to support judgements with some justification.

### Level 2 Distinction

Learners can demonstrate a thorough knowledge and understanding of a broad range of facts, terms and issues. They can describe detailed and complex processes accurately.

Learners are able to effectively apply their knowledge and understanding of facts, terms, issues and processes. They can solve complex problems in vocational contexts.

Learners analyse vocational contexts by drawing on key concepts. They can make valid decisions on application of digital systems and can explain potential implications comprehensively.

Learners make use of concepts to make clear, insightful evaluative statements about the use of digital systems in vocational contexts. They can make effective use of links between concepts to support judgements and explore alternatives.

## Key terms typically used in assessment

The following table shows the key words that will be used consistently by Pearson in our assessments to ensure learners are rewarded for demonstrating the necessary skills.

Please note: the list below will not necessarily be used in every paper and is provided for guidance only.

| Command verbs | Definition |
|---|---|
| **Annotate the diagram to explain how …** | Label the diagram and provide an explanation for each identification. |
| **Assess** | Give careful consideration to all the factors or events that apply and identify which are the most important or relevant. Make a judgement on the importance of something, and come to a conclusion where needed. |

| Command verbs | Definition |
|---|---|
| **Describe** | To give an account of something, such as steps in a process or characteristics of something. The response should be developed as they are often linked, but do not need to include a justification or reason. |
| **Discuss** | Identify the issue/situation/problem/argument that is being assessed in the question.<br>Explore all aspects of an issue/situation/problem/argument etc. by reasoning or argument. |
| **Draw** | Produce an annotated process either in the form of an information flow or data flow diagram |
| **Evaluate** | Review information then bring it together to form a conclusion, drawing on evidence, including strengths, weaknesses, alternative actions, relevant data or information. Come to a supported judgement of a subject's qualities and relation to its context. |
| **Explain** | An explanation that requires a justification/exemplification of a point.<br>The answer must contain some element of reasoning/justification. |
| **Give/State/Name** | Require recall of one or more pieces of information. |
| **Identify** | Usually requires some key information to be selected from a given stimulus/resource. |

 

# 4 Planning your programme

## Is there a learner entry requirement?

As a qualification designed to be used in Key Stage 4, there are no formal entry requirements. It is assumed that learners are studying GCSEs and other BTEC Tech Award qualifications alongside this qualification. As a centre, it is your responsibility to ensure that learners who are recruited make reasonable progress and are likely to achieve at this level. Overall achievement can be improved by highlighting links between this qualification and other qualifications as part of a Key Stage 4 programme of learning, such as through project-based learning.

## What level of sector knowledge is needed to teach this qualification?

We do not set any requirements for teachers but recommend that centres assess the overall skills and knowledge of the teaching team to ensure that they are relevant and up to date. This will give learners a rich programme that will prepare them for progression.

## What resources are required to deliver this qualification?

As part of your centre approval, you will need to show that the necessary material resources and workspaces are available to deliver the qualifications. For some components, specific resources are required.

## How does this qualification contribute to Key Stage 4 learning?

This qualification gives learners opportunities to apply learning from GCSE English and mathematics to vocational learning. For example, the skills developed in extended writing can be applied when producing written work or presentation notes on interface design or how data collection methods affect quality of data. Mathematics skills can be applied when using functions to capture and manipulate data to create a dashboard and when identifying patterns and trends in data.

## What makes good vocational teaching?

The approach to vocational teaching must be led by what is right for the particular sector. Therefore, each component includes delivery guidance and suggested assessment tasks. Using this information, our free delivery guidance and the authorised assignment briefs, you can build a course that contextualises learning in real-life and/or employment scenarios. This draws naturally on the kind of broader attributes valued in the sector, for example creativity, and the ability to plan and review work, as well as the more general skills needed in work that fit well with project-based learning, for example teamwork, independent learning.

# 5 Internal assessment

## Principles of internal assessment

This section gives an overview of the key features of internal assessment and how you can offer it effectively. The full requirements and operational information are given in the *Pearson Quality Assurance Handbook,* available on our website. When internal assessment is operated effectively it is challenging, engaging, practical and up to date. It must also be fair to all learners and meet national standards.

In this qualification, there are two internally-assessed components. They will be assessed through assignments set by the assessment team using the guidance and examples we provide. As these components are graded spanning Level 1 and Level 2 of the Regulated Qualifications Framework, our well-established approach to BTEC assignments has been retained and adapted to the needs of these learners.

At the start of the learning period for this qualification, learners will be introduced to vocational contexts for their learning, often for the first time, and they will then build up a detailed appreciation of the sector and some of the technical skills required to succeed. This requires an extended period of learning and formative assessment that supports learners in understanding the context, developing skills and aptitudes. Learners will move on to undertake realistic vocational tasks involving wider attributes such as teamwork, presentation, self-management, research and analysis.

Formal assignments to assess performance are distinct periods of assessment that learners understand are being used to judge the learning aims. They will be separate from the practice and exploration activities that have been used during the learning period.

When setting assignments, you need to take account of the requirements of the component format as explained in *Section 2*. The assignments must relate to both Level 1 and Level 2.

For example:

- achievement at Level 1 is consistent with learners using basic information to complete a task, giving some indication of whether what has been done is successful
- achievement at Level 2 in the same task could require learning to demonstrate a broader understanding through solving straightforward problems related to the task, gathering information to help learners do that and commenting on how effective their actions have been.

## Operating internal assessment

### The assessment team

So that all assessment is planned and verified, it is important that there is an effective team for internal assessment. For these qualifications, it is likely that the team will be small but it is still necessary to ensure that the assessment process is followed. Full details are given in the *Pearson Quality Assurance Handbook*.

The key roles are:

- the Lead Internal Verifier (Lead IV) for the qualification has responsibility for planning, record keeping and standard setting for the qualification. The Lead IV registers with Pearson annually and organises training using our support materials
- Internal Verifiers (IVs) check that assignments and assessment decisions are valid and that they meet our requirements. In a small team, all people will normally be assessors and IVs. No one can verify their own actions as an assessor
- assessors set or use assignments to assess learners to national standards.

 

### Planning and record keeping

The Lead IV should make sure that there is a plan for assessment of the two internal components and maintain records of assessment undertaken. The key records are:

- verification of assignment briefs
- learner authentication declarations
- assessor decisions on assignments, with feedback given to learners
- verification of assessment decisions.

Examples of records and further information are given in the *Pearson Quality Assurance Handbook.*

## Setting assignments

An assignment is issued to learners as an assignment brief with a defined start date, a completion date and clear requirements for the evidence that they need to provide. There may be specific observed practical components during the assignment period. Assignments can be divided into tasks and may require several forms of evidence. We provide authorised assignment briefs and guidance in each component for setting assignments. You can adapt materials to your local contexts.

A valid assignment will enable a clear and formal assessment outcome based on the assessment criteria. In order to support you and to make sure that all learners nationally are being assessed fairly and consistently to the national standards, we give details in components on the assignments and in authorised assignment briefs to show how valid assignments can be set. You can choose to use the materials we provide or to adapt them to take account of your local circumstances, provided that assignments are verified.

When setting your assignments:

- provide a vocational scenario or context that motivates the learner to apply their learning for a purpose and audience
- give learners clear tasks and structures for evidence – the assessment criteria are not written for this purpose
- ensure that learners are drawing on the specified range of teaching content
- specify the type and quality of evidence that a learner should produce
- if a component contains synoptic assessment the planned components must allow learners to select and apply their learning using appropriate self-management of tasks.

The specified teaching content is compulsory. The evidence for assessment need not cover every aspect of the teaching content, as learners will normally be given particular examples, case studies or contexts in their assignments.

Full definitions of types of assessment are given in *Appendix 1. S*ome of the main types of assessment are:

- oral or written presentations with assessor questioning
- practical assessments with observation records and supporting evidence
- work logbooks, reflective journals.

The form(s) of evidence selected must allow a verifier to check the assessor's decisions independently. For example, when you are using performance evidence, you need to consider how supporting evidence can be captured through recordings, photographs or task sheets.

You will need to give learners a guide that explains how assignments are used for assessment, how assignments relate to the teaching programme and how learners should use and reference source materials, including what would constitute plagiarism. The guide should also set out your approach to operating assessment, such as how learners must submit work and request extensions.

## Making valid assessment decisions

### Assessment decisions through applying assessment criteria

Assessment decisions for these qualifications are based on the specific criteria given in each component. In order to apply the criteria, centres should be aware of the difference between Level 1 and 2 of the Regulated Qualifications Framework. At both levels, learners are expected to take responsibility to complete tasks completely and correctly. The differences include:

- **at Level 1** – completion of tasks using evidence that may be simple, structured, routine, using given information and using simple judgements and basic factual information
- **at Level 2** – completion of tasks using evidence that may be semi-structured or unstructured, using researched or analysed information, showing understanding, problem solving and using own judgement.

The way in which the learner has provided evidence against the tasks will indicate the level they are working at.

Each internal component shows how grades can be awarded using clear and unambiguous criteria. Each assignment shows a hierarchy of criteria that should be considered holistically to apply to the evidence. It should be understood that in each of the two levels a learner demonstrating achievement for a higher grade would need to do so through satisfying the lower grade criteria. For example, if a Level 2 Merit criterion requires the learner to 'compare' and the related Level 2 Pass criterion requires the learner to 'explain', then in making a comparison the learner will need to 'explain'.

When a learner has completed the assessment for a component, you can give a component grade.

| | |
|---|---|
| **Level 2 Distinction** | A learner has satisfied all the Level 2 Distinction criteria for the component through:<br>• outstanding performance that fully addresses all learning aims, with a sound grasp of facts and concepts, selection and interpretation of information, and fluent use of skills in more complex situations. |
| **Level 2 Merit** | A learner has shown high performance across the component through **either**:<br>• having satisfied all the Level 2 Merit criteria for all learning aims **or**<br>• having achieved all the Level 2 Pass criteria and showing an outstanding performance in the final assignment as defined by the Level 2 Distinction criteria. |
| **Level 2 Pass** | A learner has satisfied all the Level 2 Pass criteria for the learning aims through:<br>• showing coverage and understanding of content at a good standard and appropriate skill demonstration. |
| **Level 1 Merit** | A learner has shown an acceptable standard across the component, addressing a range of content and demonstrating some understanding through **either**:<br>• having satisfied all the Level 1 Merit criteria for all learning aims **or**<br>• having achieved the Level 1 Pass criteria and showing a good standard of performance in the final assignment as defined by the Level 2 Pass criteria. |
| **Level 1 Pass** | A learner must satisfy all Level 1 Pass criteria for the learning aims through:<br>• showing basic knowledge and ability to complete routine tasks. |
| **U** | A learner who does not satisfy all the Level 1 Pass criteria should be reported as having a U grade. |

 

### Making assessment decisions using criteria

As an assessor, you review authenticated learner work and make judgements on standards using the assessment criteria and the supporting information given in components and training materials. The evidence from a learner should be judged using all the relevant criteria. In making a judgement, you should consider whether evidence is present and sufficiently comprehensive.

Once the team has agreed the outcome, a formal assessment decision is recorded and reported to learners. The information given:

- must show the formal decision and indicate where criteria have been met
- may show where attainment against criteria has not been demonstrated
- must avoid giving direct, specific instructions on how the learner can improve the evidence to achieve a higher grade.

### Authenticity of learner work

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

Once an assessment has begun, learners must not be given feedback that relates specifically to their evidence and how it can be improved, as learners must work independently.

An assessor must assess only learner work that is authentic, i.e. learners' own independent work. Learners must authenticate the evidence that they provide for assessment through signing a declaration stating that it is their own work.

Assessors must complete a declaration that:

- the evidence submitted for this assignment is the learner's own
- the learner has clearly referenced any sources used in the work
- they understand that false declaration is a form of malpractice.

Centres can 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 learner is not authentic. The assessor must then take appropriate action using the centre's policies for malpractice. Further information is given in *Section 9*.

### Resubmission of improved evidence

An assignment provides the final assessment for the relevant learning aims and is normally a final assessment decision, except where the Lead IV approves one opportunity to resubmit improved evidence, based on the completed assignment brief.

The Lead IV has the responsibility to make sure that resubmission is operated fairly. This means:

- checking that a learner can be reasonably expected to perform better through a second submission, for example that the learner has not performed as expected
- making sure that giving a further opportunity does not give an unfair advantage over other learners, for example through the opportunity to take account of feedback given to other learners
- checking that the learner will be able to provide improved evidence without further guidance and that the original evidence submitted remains valid.

Once an assessment decision has been given to the learner, the resubmission opportunity must have a deadline within 15 working days in the same academic year.

For assessment to be fair, it is important that learners are all assessed in the same way and that no learners are advantaged by having additional time or the opportunity to learn from others. Therefore, learners who do not complete assignments by the planned deadline or an authorised extension deadline (if one was given for specific circumstances) may not have the opportunity to subsequently resubmit. Similarly, learners submitting work that is not their own should not be given an opportunity to resubmit.

The outcome of any resubmission of the assignment by the learner is then recorded as the final decision.

A learner who has not achieved their expected level of performance in the relevant learning aims **after resubmission** of an assignment may be offered a single retake opportunity using a new assignment. The highest grade that may be awarded is Level 1 Pass.

The Lead IV must authorise a retake with a new assignment only in exceptional circumstances and, where it is necessary, appropriate and fair to do so. For further information on offering a retake opportunity, you should refer to the *BTEC Centre Guide to Assessment*. We provide information on writing assignments for retakes on our website (www.btec.co.uk/keydocuments).

# 6 Quality assurance

## 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 qualification.
- 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 learners.
- Centres must deliver the qualification in accordance with current equality legislation.
- Centres should refer to the teacher guidance section in individual components to check for any specific resources required.

## Continuing quality assurance and standards verification

We produce the *Pearson Quality Assurance Handbook* on an annual basis. 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 BTEC 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, intended to exemplify the processes required for effective assessment, and 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 BTEC Tech Award qualifications 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 learner work and associated documentation
- an overarching review and assessment of a centre's strategy for delivering and quality assuring its BTEC programmes, for example making sure that the synoptic component is placed appropriately in the delivery of the programme.

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

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

# 7 External assessment

## Role of external assessment for the BTEC Tech Award suite

External assessment in the BTEC Tech Award suite comprises 40 per cent of the total qualification GLH. The external assessment is weighted to contribute the same proportion of the overall qualification grade. To ensure that the assessment is fully challenging and that the grading of the component reflects performance in a qualification as a whole, the assessment is synoptic and is taken at or near the end of a learner's programme. Our approach ensures that learners are able to show depth of understanding through being able to apply their conceptual and sector knowledge in practical contexts. The external assessment is rigorous but fully valid as preparation for progression to vocational qualifications.

This section gives an overview of the key features of external assessment and how you, as an approved centre, can offer it effectively.

## External assessment

The *Summary of assessment* section in Component 3 sets out the specific arrangements for the external assessment. This assessment is taken under supervised conditions. The expected evidence that must be submitted is explained in the component and sample assessment materials (SAMs). Your learners will undertake the external assessment during the period timetabled by Pearson.

## Timing of external assessment

External assessment for this qualification is available in February and May from 2020 onwards. Learners are permitted to resit the external assessment once. In making entries for external assessment, you need to consider the nature of the external assessment and whether learners are likely to benefit more from a resit or from having a longer period to prepare.

## Sample assessment materials

Each externally-assessed component has a set of sample assessment materials (SAMs) that accompanies this specification. SAMs are there to give you an example of what the external assessment will look like in terms of the feel and level of demand of the assessment.

The SAMs show the range of possible activity types that may appear in the actual assessments and give you a good indication of how the assessments will be structured. While SAMs can be used for practice with learners, as with any assessment, the content covered and specific details of the activities will vary in each assessment.

These sample assessments can be downloaded from our website. We will provide further materials over time to support assessment, for example sample marked learner work, further sample materials, examiner feedback.

## Conduct of set tasks for external assessment

The external assessment is set and marked by Pearson. You need to ensure that learners are aware that they need to work independently and of the requirements for any external assessment.

We define degrees of control for assessments for BTEC qualifications as:

- **high control**
  this is the completion of assessment in formal invigilated examination conditions
- **medium control**
  this is completion of assessment, usually over a longer period of time, it may include a period of supervised conditions. The supervised conditions may allow learners to access resources, prepared notes or the internet to help them complete the task.

Further information on responsibilities for conducting external assessment is given in the document *Instructions for Conducting External Assessments (ICEA)*, available on our website, qualifications.pearson.com (search for *ICEA*).

## Pearson marking and awarding grades

### Marking

Pearson will allocate standardised examiners to mark the evidence remotely. Your Examinations Officer will be given guidance as to how to send this evidence to us or the examiner directly.

We review quality of marking throughout the marking period and ensure that our examiners mark to the agreed marking scheme during this time.

### Awarding of grades

Awarding is used to set grade boundaries and ensure that standards are maintained over time. This is important, as we must ensure that learners have the same opportunity to achieve, regardless of the assessment opportunity. This means that grade boundaries can change across different assessment opportunities based on the raw marks but that the resulting grades are fair and consistent.

### Results issue

Results are issued in line with advertised timeframes, which can be found in the 'key dates' section of our *Information Manual* available on our website: qualifications.pearson.com (search for *key dates*).

# 8 Final grading and awarding

## Awarding and reporting for the qualification

This section explains the rules we apply in awarding a qualification and providing an overall qualification grade for each learner.

The awarding and certification of the qualification will comply with the requirements of the Office of Qualifications and Examinations Regulation (Ofqual), CCEA Regulation and Qualifications Wales.

## Eligibility for an award

In order to be awarded a qualification, a learner must complete and achieve **all three components with a grade Level 1 Pass or above** and achieve the **minimum number of points** at a grade threshold.

Learners who do not pass all components shown in the structure will not achieve a qualification, even if they have enough points at a grade threshold.

Subject to eligibility, Pearson will automatically calculate the qualification grade for your learners when the internal component grades are submitted and the qualification claim is made. Learners will be awarded qualification grades for achieving the sufficient number of points within the ranges shown in the relevant calculation of qualification grade table for the cohort.

## Calculation of the qualification grade

The final grade awarded for a qualification represents an aggregation of a learner's performance across the qualification. As the qualification grade is an aggregate of the total performance, there is some element of compensation in that a higher performance in some components may be balanced by a lower outcome in others.

The *Calculation of qualification grade* table, set out later in this section, shows how BTEC Tech Awards are awarded at seven grades from Level 1 Pass to Level 2 Distinction*. The table shows the minimum thresholds for calculating these grades. The table will be kept under review over the lifetime of the qualification. The most up to date table will be available in the latest version of the specification on our website.

Pearson will monitor the qualification standard and reserves the right to make appropriate adjustments.

Learners who do not meet the minimum requirements for a qualification grade to be awarded will be recorded as Unclassified (U) and will not be certificated.

### Points available for internal components

The table below shows the number of points available for internal components, depending on the grade awarded.

| | |
|---|---|
| **U** | 0 |
| **Level 1 Pass** | 9 |
| **Level 1 Merit** | 15 |
| **Level 2 Pass** | 22 |
| **Level 2 Merit** | 29 |
| **Level 2 Distinction** | 36 |

### Points available for external components

Raw marks from external components will be awarded points based on performance in the assessment. Pearson will automatically calculate the points for the external component once the external assessment has been marked and grade boundaries have been set.

The points available at each grade in the external component is as follows:

| | |
|---|---|
| **U** | 0 |
| **Level 1 Pass** | 12–17 |
| **Level 1 Merit** | 18–23 |
| **Level 1 Distinction** | 24–29 |
| **Level 2 Pass** | 30–35 |
| **Level 2 Merit** | 36–41 |
| **Level 2 Distinction** | 42–48 |

### Calculation of qualification grade table

| Grade | Points threshold |
|---|---|
| **Level 1 Pass** | 30 |
| **Level 1 Merit** | 44 |
| **Level 1 Distinction** | 58 |
| **Level 2 Pass** | 72 |
| **Level 2 Merit** | 95 |
| **Level 2 Distinction** | 105 |
| **Level 2 Distinction*** | 114 |

The table is subject to review over the lifetime of the qualification. The most up-to-date version will be available on our website.

 

## Examples of grade calculations based on table applicable to registrations from September 2017

**Example 1:** Achievement of an Award with a Level 1 Pass grade

| Component | Type | Grade | Points |
|---|---|---|---|
| 1 | Internal | Level 1 Pass | 9 |
| 2 | Internal | Level 1 Merit | 15 |
| 3 | External | Level 1 Merit | 18 |
| | | **Level 1 Pass** | **42** |

**Example 2:** Achievement of an Award with a Level 2 Merit grade

| Component | Type | Grade | Points |
|---|---|---|---|
| 1 | Internal | Level 2 Merit | 29 |
| 2 | Internal | Level 2 Distinction | 36 |
| 3 | External | Level 2 Merit | 36 |
| | | **Level 2 Merit** | **101** |

**Example 3:** An unclassified result

| Component | Type | Grade | Points |
|---|---|---|---|
| 1 | Internal | Level 2 Merit | 29 |
| 2 | Internal | U | 0 |
| 3 | External | Level 2 Merit | 36 |
| | | **U** | **65** |

The learner has a U in Component 2.

The learner has enough points for a Level 1 Distinction grade but has not met the minimum requirements for a Pass in all components.

# 9 Administrative arrangements

## Introduction

This section focuses on the administrative requirements for delivering BTEC Tech Award qualifications. It will be of value to Quality Nominees, Lead IVs, Programme Leaders and Examinations Officers.

## Learner registration and entry

Shortly after learners start the programme of learning, you need to make sure that they are registered for the qualification and that appropriate arrangements are made for internal and external assessment. You need to refer to our *Information Manual* for information on making registrations for the qualification and entries for external assessments.

Learners can be formally assessed only for a qualification on which they are registered. If learners' intended qualifications change, for example if a learner decides to choose a qualification from a different sector, then you must transfer the learner appropriately.

## Access to assessment

All assessments need to be administered carefully to ensure that all learners are treated fairly and that results and certification are issued on time to allow learners to progress to chosen progression opportunities.

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

- learners with a protected characteristic (as defined by the Equality Act 2010) are not, when they are undertaking one of our qualifications, disadvantaged in comparison to learners who do not share that characteristic
- all learners 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 in the Joint Council for Qualifications (JCQ) document *Access Arrangements, Reasonable Adjustments and Special Consideration for General and Vocational Qualifications*.

The Pearson Equality and Diversity policy is on our website.

## Administrative arrangements for internal assessment

### Records

You are required to retain records of assessment for each learner. Records should include assessments taken, decisions reached and any adjustments or appeals. Further information can be found in our *Information Manual.* We may ask to audit your records so they must be retained as specified.

### Reasonable adjustments for assessment

A reasonable adjustment is one that is made before a learner takes an assessment to ensure that they have 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 learners. 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 learners with protected characteristics are on our website in the document *Supplementary guidance for reasonable adjustment and special consideration in vocational internally assessed components.*

### Special consideration

Special consideration is given after an assessment has taken place for learners who have been affected by adverse circumstances, such as illness. You must operate special consideration in line with our 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 component, or omit the application of any assessment criteria to judge attainment. Pearson can consider applications for special consideration in line with the policy.

### Appeals against assessment

Your centre must have a policy for dealing with appeals from learners. 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 Lead IV or other member of the programme team. The assessment plan should allow time for potential appeals after assessment decisions have been given to learners. If there is an appeal by a learner, you must document the appeal and its resolution. Learners have a final right of appeal to Pearson but only if the procedures that you have put in place have not been followed. Further details are given in our policy *Enquiries and Appeals about Pearson Vocational Qualifications and End Point Assessments*.

## Administrative arrangements for external assessment

### Entries and resits

For information on the timing of assessment and entries, please refer to the annual examinations timetable on our website. Learners are permitted to have one resit of an external assessment where necessary.

### Access arrangements requests

Access arrangements are agreed with Pearson before an assessment. They allow learners with special educational needs, disabilities or temporary injuries to:

- access the assessment
- show what they know and can do without changing the demands of the assessment.

Access arrangements should always be processed at the time of registration. Learners will then know what type of arrangements are available in place for them.

### Granting reasonable adjustments

For external assessment, a reasonable adjustment is one that we agree to make for an individual learner. A reasonable adjustment is defined for the individual learner and informed by the list of available access arrangements.

Whether an adjustment will be considered reasonable will depend on a number of factors, to include:

- the needs of the learner with the disability
- the effectiveness of the adjustment
- the cost of the adjustment; and
- the likely impact of the adjustment on the learner with the disability and other learners.

Adjustment may be judged unreasonable and not approved if it involves unreasonable costs, timeframes or affects the integrity of the assessment.

### Special consideration requests

Special consideration is an adjustment made to a learner's mark or grade after an external assessment to reflect temporary injury, illness or other indisposition at the time of the assessment. An adjustment is made only if the impact on the learner is such that it is reasonably likely to have had a material effect on that learner being able to demonstrate attainment in the assessment.

Centres are required to notify us promptly of any learners that they believe have been adversely affected and request that we give special consideration. Further information can be found in the special requirements section on our website.

### 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.

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

Malpractice may arise or be suspected in relation to any component or type of assessment within the qualification. For further details regarding malpractice and advice on preventing malpractice by learners please see the document *Centre guidance: Dealing with malpractice and maladministration in vocational qualifications*, available on our website.

Note that the procedures we ask you to adopt vary between internally-assessed components and those that are externally assessed.

### Internally-assessed components

Centres are required to take steps to prevent malpractice and to investigate instances of suspected malpractice. Learners must be given information that explains what malpractice is for internal assessment and how suspected incidents will be dealt with by the centre. The *Centre guidance: Dealing with malpractice and maladministration in vocational qualifications* document gives full information on the actions we expect you to take.

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

In the interests of learners and centre staff, centres need to respond effectively and openly to all requests relating to an investigation into an incident of suspected malpractice.

### Externally-assessed components

External assessment means all aspects of components that are designated as external in this specification including preparation for tasks and performance. For these assessments, centres must follow the JCQ procedures set out in the latest version of *JCQ Suspected Malpractice in Examinations and Assessments* (www.jcq.org.uk).

In the interests of learners and centre staff, centres need to respond effectively and openly to all requests relating to an investigation into an incident of suspected malpractice.

### Learner malpractice

Heads of Centres are required to report incidents of any suspected learner malpractice that occur during Pearson external assessments. We ask that centres do so by completing a *JCQ Form M1* (available at www.jcq.org.uk/exams-office/malpractice) and emailing it and any accompanying documents (signed statements from the learner, 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 learners lies with Pearson.

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

### Teacher/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 M2a* (available atwww.jcq.org.uk/exams-office/malpractice) 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 learners) 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 learners and centre staff suspected of malpractice of their responsibilities and rights; see *6.15* of the JCQ document *Suspected Malpractice in Examinations and Assessments*.

Pearson reserves the right in cases of suspected malpractice to withhold the issuing 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.

You should be aware that Pearson may need to suspend 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

Where malpractice is proven we may impose sanctions or penalties.

Where learner malpractice is evidenced, penalties may be imposed such as:

- disqualification from the qualification
- being barred from registration for Pearson qualifications for a 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 registration of learners
- debarring staff members or the centre from delivering Pearson qualifications
- suspending or withdrawing centre approval status.

The 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 learners 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 about Pearson vocational qualifications and end point assessment policy*, on our website. In the initial stage of any aspect of malpractice, please notify the Investigations Team by email via pqsmalpractice@pearson.com who will inform you of the next steps.

### Certification and results

Once a learner has completed all the required components for a qualification, the centre can claim certification for the learner, provided that quality assurance has been successfully completed. For the relevant procedures, please refer to our *Information Manual*. You can use the information provided on qualification grading to check overall qualification grades.

### Results issue

Learner results will then be issued to centres. The result will be in the form of a grade. You should be prepared to discuss performance with learners, making use of the information we provide and post-results services.

### Post-assessment services

It is possible to transfer or reopen registration in some circumstances. The *Information Manual* gives further information.

## Additional documents to support centre administration

As an approved centre, you must ensure that all staff delivering, assessing and administering the qualifications have access to this documentation. These documents are reviewed annually and are reissued if updates are required.

- *Pearson Quality Assurance Handbook*: this sets out how we will carry out quality assurance of standards and how you need to work with us to achieve successful outcomes.
- *Lead Verifier Reports*: these are produced annually and give feedback on the overall performance of learners.
- *Information Manual*: this gives procedures for registering learners for qualifications, transferring registrations, entering for external assessments and claiming certificates.
- *Regulatory policies*: our regulatory policies are integral to our approach and explain how we meet internal and regulatory requirements. We review the regulated policies annually to ensure that they remain fit for purpose. Policies related to this qualification include:
  - JCQ *Adjustments for candidates with disabilities and learning difficulties, Access Arrangements and Reasonable Adjustments*
  - age of learners
  - centre guidance for dealing with malpractice
  - recognition of prior learning and process.

This list is not exhaustive and a full list of our regulatory policies can be found on our website.

# 10 Resources and support

Our aim is to give you support to enable you to deliver the BTEC Tech Award suite with confidence. You will find resources to support teaching and learning, and professional development on our website.

## Support for setting up your course and preparing to teach

### Schemes of Work

The free Schemes of Work give suggestions and ideas on how to teach the qualifications, they include teaching tips and ideas, assessment preparation and suggestions for further resources.

### Course planner

High-level overview of how to plan teaching term by term over one or two years.

## Support for teaching and learning

Pearson Learning Services provides a range of engaging resources to support BTEC qualifications, including:

- student textbooks in ebook and print formats
- teacher support, including slides, interactive activities and videos via the ActiveLearn Digital Service
- teaching and learning resources may also be available from a number of other publishers.

Details of Pearson's own resources and all endorsed resources can be found on our website.

## Support for assessment

### Sample assessment materials (SAMs) for externally-assessed components

Sample assessment materials are available for the externally-assessed component and can be downloaded from the Pearson Qualifications website. An additional set of sample assessment materials for the externally-assessed component will also be available, allowing your learners further opportunities for practice.

### Sample assessment materials (SAMs) for internally-assessed components

We do not prescribe the assessments for the internally-assessed components. Rather, we allow you to set your own, according to your learners' preferences.

We do provide a service in the form of Authorised Assignment Briefs, which are approved by Pearson Standards Verifiers. They are available via our website or on myBTEC.

### Sample marked learner work

To support you in understanding the expectation of the standard at each grade, examples of marked learner work at PM/MD grades linked to the Authorised Assignment Briefs will also be made available on our website.

## Training and support from Pearson

### People to talk to

There are many people who can support you and give you advice and guidance on delivering your BTEC Tech Awards. They include:

- Standards Verifiers – they can support you with preparing your assignments, ensuring that your assessment plan is set up correctly, and support you in preparing learner work and providing quality assurance through sampling
- Subject Advisors – available for all sectors. They understand all Pearson qualifications in their sector and so can answer sector-specific queries on planning, teaching, learning and assessment
- Customer Services – the 'Support for You' section of our website gives the different ways in which you can contact us for general queries. For specific queries, our service operators can direct you to the relevant person or department.

### Training and professional development

We provide a range of training and professional development events to support the introduction, delivery, assessment and administration of BTEC Tech Awards. These sector-specific events, developed and delivered by specialists, are available both face to face and online.

 

# Appendix 1

## Glossary of terms used for internally-assessed components

This is a summary of the key terms used to define the requirements in the components.

| Term | Definition |
|---|---|
| **Accurate** | Produce work competently, fit for purpose without significant error. |
| **Adequate** | Acceptable in quality or quantity. |
| **Analyse** | Examine methodically and in detail, typically in order to interpret. |
| **Apply** | Put knowledge, understanding or skills into action in a particular context. |
| **Appropriate** | Select and use skills in ways that reflect the aim. |
| **Assess** | Present a careful consideration of varied factors or events that apply to a specific situation or identify those that are the most important or relevant, and arrive at a conclusion. |
| **Coherent** | Logically consistent. |
| **Collaborate** | Work jointly with others to produce defined outcomes. |
| **Communicate** | To convey ideas or information to others. |
| **Compare** | Identify the main factors relating to two or more items/situations, explain the similarities and differences, and in some cases say which is best and why. |
| **Competent** | Having the necessary knowledge or skill to do something suitably or sufficiently in amount or extent. |
| **Comprehensive** | Full, covering a range of factors. |
| **Confident** | Demonstrate secure application of skills or processes, with no need for prompting. |
| **Consistent** | Able to repeat reliably an action that progresses towards achieving an aim. |
| **Creative** | Using techniques, equipment and processes to express ideas or feelings in new ways. |
| **Define** | State or describe exactly the nature, scope or meaning of something. |
| **Demonstrate** | Carry out and apply knowledge, understanding and/or skills in a practical situation. |
| **Describe** | Give a clear, objective account in their own words, showing recall, and in some cases application, of relevant features and information. Normally requires breadth of content coverage. |
| **Detailed** | Having additional facts or information beyond a simple response. |
| **Discuss** | Consider different aspects of a topic and how they interrelate and the extent to which they are important. |

| Term | Definition |
|---|---|
| **Effective** | Show control over techniques, equipment and processes to meet the details and broad aims of a requirement efficiently. |
| **Evaluate** | Bring together all information and review it to form a conclusion, drawing on evidence, including strengths, weaknesses, alternative actions, relevant data or information. |
| **Explain** | Provide details and give reasons and/or evidence to support an argument. |
| **Explore** | Try out the qualities of materials, techniques or processes through practical investigation, with some record of results. |
| **Identify** | Indicate the main features or purpose of something. |
| **Independent** | Capable of carrying out tasks from given information. |
| **Investigate** | Carry out research or trial activities to increase understanding of the application of factual information. |
| **Justify** | Give reasons or evidence to support an opinion. |
| **Outline** | Summarise or indicate the principal features of something or a brief description or explanation with main points. |
| **Refine** | Improve initial work, taking feedback into account. |
| **Reflect** | Think carefully and review information and/or performance, includes articulating ideas, concepts, activities, findings or features. |
| **Review** | Assess formally based on appropriate evidence or information with the intention of instituting change if necessary. |
| **Secure** | Well practised, confident in own ability and skills. |
| **Select** | Choose the best or most suitable option related to specific criteria or outcomes. |
| **Show** | Present using practical skills. |
| **Simple** | Well defined, routine, frequently occurring. |
| **State** | Express something definitely or clearly. |
| **Summarise** | Gathers together all of the main aspects of a given situation or experience in a condensed format. |
| **Support** | Guidance and instruction. |


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