



Department  
for Education

# Digital Systems and Data

Level 2 Foundation Certificate  
subject content

**DRAFT FOR CONSULTATION**

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## 1. Introduction

Foundation Certificate subject content sets out the national learning outcomes (LOs) and the knowledge, understanding and skills common to all Foundation Certificate qualification specifications in this subject.

The content is designed to be achievable between 240 and 300 Guided Learning Hours (GLH) of teaching and learning.

The content provides the framework within which the awarding organisations (AOs) create the detail of the qualification specification.

## 2. Aims

Foundation Certificates are one-year, level 2, high-quality qualifications that prepare students for progression to further study at level 3 options, including T Levels, V Levels or A Levels. They are aimed at students who did not meet the provider's own entry requirements to progress directly from GCSE to level 3. The Department does not set mandatory prior learning requirements; providers may set their own entry requirements, including any GCSEs required.

The purpose of this qualification is to prepare students for further study options at level 3, related to the subject area, through purposeful, authentic work-related learning that enables students to:

**Apply their knowledge, understanding and skills to achieve the specified learning outcomes:**

- **Learning Outcome 1 (LO1)** Clean, interpret and visualise a dataset in order to answer a question and communicate findings clearly
- **Learning Outcome 2 (LO2)** Set up a network and apply access, authentication and configuration measures to protect confidentiality, integrity and availability of data and services
- **Learning Outcome 3 (LO3)** Plan, develop and test a programming solution in order to meet a brief
- **Learning Outcome 4 (LO4)** Plan and configure hardware and software components in order to deliver a functional digital product
- **Learning Outcome 5 (LO5)** Identify and communicate security weaknesses and associated risks in order to support improvement and troubleshooting
- **Learning Outcome 6 (LO6)** Select and apply reliable digital sources to produce evidence-based recommendations for an intended purpose

## PROPOSED SUBJECT CONTENT FOR CONSULTATION

Through these, develop strong transferable skills<sup>1</sup> focused on analysis, decision-making, communication, investigation, evaluation and self-management, including:

- planning - structured activities such as cleaning datasets, developing code, configuring systems and delivering digital products by identifying steps, sequencing tasks, estimating resources and managing time
- analysing - data, systems and digital scenarios by organising information into types, identifying patterns and anomalies, deconstructing problems, and understanding how components interact
- critical thinking - evaluating information, data, systems behaviour and AI-enabled outputs by questioning accuracy, weighing pros and cons, applying logical reasoning and reaching justified conclusions
- communicating - findings, risks and recommendations clearly using written, visual and digital formats, adapting explanations and terminology to suit purpose and audience
- investigating - suitable digital sources, interrogating datasets, reviewing logs and dashboards, and designing and carrying out tests to confirm accuracy, function or security
- evidence-based decision-making - when selecting tools, configurations and solutions, assessing likely impact, and justifying recommended actions or improvements.
- self-managing - own performance by working through multi-stage tasks, monitoring progress, checking accuracy, responding to feedback and refining outcomes through testing and review.
- recording - information accurately by capturing, storing and organising digital content such as datasets, code, configurations, findings and documentation.
- evaluating - processes, evidence and outcomes by reviewing effectiveness, appraising accuracy and reliability, and making recommendations for improvement.
- observing - situational awareness by monitoring system outputs, data quality, error messages, logs and alerts to identify issues or abnormal behaviour

Continue to develop literacy, numeracy and digital skills by applying them within the context of achieving the learning outcomes:

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<sup>1</sup> Please refer to the Framework for Transferable Skills and Work-related Behaviours document, published alongside the subject content as part of the consultation.

## PROPOSED SUBJECT CONTENT FOR CONSULTATION

- students develop literacy skills through:
  - reading and interpreting technical information, briefs, datasets and digital documentation
  - using subject-specific and technical vocabulary accurately
  - recording processes, decisions and findings clearly in structured formats
  - summarising information, drawing conclusions and explaining reasoning
  - communicating findings, risks and recommendations clearly for different audiences
  - acknowledging and referencing digital sources appropriately
- students develop numeracy skills through:
  - interpreting and analysing numerical data, including totals, averages and proportions
  - identifying patterns, trends and anomalies within datasets
  - checking accuracy and consistency of numerical information
  - applying numerical reasoning to support conclusions, risk identification and troubleshooting
  - using quantitative evidence to justify recommendations and decisions
- students develop essential digital skills through:
  - using digital tools and applications to clean, analyse, visualise and present data
  - configuring hardware, software and network components securely
  - developing, testing and refining programming solutions
  - managing digital information by producing, organising, storing and retrieving content

Develop knowledge and understanding of the key theories and principles which support effective practice in the subject, through:

- data-informed and evidence-based practice, using accurate data, reliable sources and system information to support decisions, recommendations and improvements

## PROPOSED SUBJECT CONTENT FOR CONSULTATION

- computational thinking, applying logical sequencing, pattern recognition, abstraction and problem-solving when analysing data, programming and configuring systems
- systems thinking, understanding how data, software, hardware and networks interact and how changes affect overall system performance
- secure-by-design principles, protecting confidentiality, integrity and availability through appropriate access control, authentication and configuration
- iterative development and testing, planning, testing, reviewing and refining solutions to improve accuracy, functionality and reliability
- augmented intelligence, using AI-enabled tools to support analysis, coding, configuration and research while maintaining human oversight, validation and professional responsibility
- responsible and ethical digital practice, handling data and security information appropriately, respecting privacy, verifying information and acknowledging sources
- clear, audience-appropriate communication, presenting findings, risks and recommendations clearly using written, visual and digital formats
- quality assurance and validation, checking accuracy, reviewing outputs (including AI-generated content), and ensuring solutions meet intended requirements
- efficient and sustainable digital practice, using digital tools, systems and resources effectively and responsibly

The aspects listed above are indicative of the scope and intent of the qualification and are not intended to be exhaustive.

### 2.1 Optionality

There are no optional or elective elements through which students can meet the mandatory minimum content required for this Foundation Certificate subject.

### 2.2 Progression

Foundation Certificates aim to encourage student motivation and interest in progressing to further study in a relevant subject. They provide a broad and applied understanding of the sector that intentionally avoids narrow specialisation. This is to help and inform student choice about which further study option they want to pursue and the subject areas to specialise in, when they progress to the next level.

## PROPOSED SUBJECT CONTENT FOR CONSULTATION

The content provides both a strong conceptual foundation for the subject and the basis for developing a deeper understanding of digital systems, data and digital solutions.

This combination of theory and practice and the transferable skills students develop, will provide a stepping-stone that effectively prepares them for a wide range of related further study options. This may include progression to further study at level 3, including V Levels, T Levels or A Levels.

## 3. Subject Content

### 3.1 Guidance for awarding organisations

#### Inclusion of content in qualification specifications

The subject content is structured into learning outcomes which set out the knowledge, understanding and skills that are expected to be demonstrated through applied activity to achieve the learning outcomes. A short rationale is provided for each learning outcome for guidance only, offering an introductory narrative explanation. Each learning outcome includes:

- what students must demonstrate they know and understand:
  - statements of knowledge and understanding
- what students must demonstrate they are able to do:
  - skills statements
- transferable skills that may be developed and demonstrated through the learning outcome
- contextualised literacy and numeracy and essential digital skills that are required to achieve the outcome

The subject content links knowledge and understanding and skills, to reflect how they are intended to be developed and applied together, rather than separately in isolation.

References to work-related behaviours that may be demonstrated through engagement with each learning outcome have been signposted and may be set out by awarding organisations in specifications for teaching and learning.

All the subject content outlined in this document must be included in qualification specifications.

#### **Lists of content which start with a colon ‘:’**

This denotes that all the content in the list is compulsory and is expected to be included in awarding organisations’ qualification specifications.

#### **Lists of content which start with ‘including’**

This denotes that all the content in the list is compulsory and is expected to be included in awarding organisations’ qualification specifications. However, the list is a minimum and awarding organisations may choose to add to the list.

## PROPOSED SUBJECT CONTENT FOR CONSULTATION

### Use of 'e.g.'

This is used to exemplify what is meant by the content statement. Awarding organisations can specify the example cited or other examples in their specifications should that be appropriate.

## 3.2 Learning outcomes

Each learning outcome sets out the knowledge, understanding and skills that a student will need to know and apply to achieve the outcome and signposts to the work-related behaviours that may be demonstrated through engagement with the learning outcome.

The subject content assumes no prior learning or qualification in the subject and introduces concepts from foundational level where required.

All students are to develop the knowledge, understanding and skills to be able to demonstrate all learning outcomes by the end of the programme, as the mandatory minimum content for this subject:

- knowledge refers to both knowledge and understanding. It relates to the theoretical facts, principles, concepts, procedures and techniques that students should acquire
- knowledge and understanding specified in this section are expected to be demonstrated through applied activity rather than separately
- skills refer to subject-specific and transferable skills needed to achieve a learning outcome

The applied learning of knowledge, understanding and skills is through the engagement with the learning outcomes across a range of digital systems and data contexts. Key introductory themes include digital concepts and practices, including data handling, digital systems, programming logic, configuration, cyber security and research. These themes are intentionally broad, avoiding narrow specialisation.

This content has been designed to be achievable in **240 GLH** (subject to the outcome of the content consultation).

The learning outcomes could be delivered independently of each other, or together in combination.

## PROPOSED SUBJECT CONTENT FOR CONSULTATION

### **LO1 Clean, interpret and visualise a dataset in order to answer a question and communicate findings clearly**

To achieve this learning outcome, students must apply knowledge and understanding through cleaning, analysing and presenting data to answer a defined question.

Rationale:

This learning outcome introduces students to the foundational practice of working with data, which underpins level 3 Digital pathways. By working with structured datasets, students clean, analyse and visualise data to answer defined questions, developing an understanding of how data is used to inform decisions within digital contexts. Working with clearly defined datasets provides an accessible scope while building stretch to level 3 study. This provides a coherent stepping-stone for progression to level 3, including T Levels, V Levels or A Levels, where students may engage with more complex data analysis and interpretation, modelling and decision-making.

The learning outcome also strengthens key transferable skills, including numeracy when working with totals, averages and proportions, literacy when communicating findings clearly, and digital skills when using tools to prepare and present data. Students develop confidence in identifying patterns, drawing conclusions and presenting information in a way that is appropriate to purpose and audience, reflecting expectations encountered in real-world digital contexts.

To do this, students are expected to apply the following knowledge and understanding:

- numerical, text, categorical and date or time data types
- digital data sources comprising spreadsheets, databases, survey outputs, online data repositories and system-generated reports
- the role of database structures and fields used to organise and retrieve structured data
- the effect of missing values, duplicate records, inconsistent formatting and incorrect data types on accuracy and interpretation
- the efficient use, storage and handling of data to support responsible and sustainable digital practices
- the role of graphical and tabular formats, including their use within infographics, in supporting interpretation and communication of findings
- the role of spreadsheet and data presentation tools, and automated and AI-enabled features in supporting analysis and presentation of data
- the role of emerging digital technologies in shaping digital systems and services

## PROPOSED SUBJECT CONTENT FOR CONSULTATION

- the contribution of clear written and visual communication when presenting findings

In working to achieve the learning outcome, students must be able to:

- format, clean and prepare digital datasets using spreadsheet and data presentation tools
- review datasets for accuracy and resolve missing values, duplicate records, inconsistent formatting and incorrect data types
- create tables and charts to represent data
- identify patterns and draw conclusions
- communicate findings clearly for an intended purpose

Transferable skills that may be developed and demonstrated through this learning outcome include:

- analytical reasoning when identifying patterns and checking data accuracy
- recording information clearly when preparing data and presenting outputs
- clear communication when presenting findings through tables, charts and written explanations
- numeracy in interpreting totals, averages and proportions within datasets
- digital capability in manipulating and presenting data using appropriate tools

Work-related behaviours that may be demonstrated through engagement with this learning outcome include:

- attention to detail
- persistent
- reliable

## PROPOSED SUBJECT CONTENT FOR CONSULTATION

### **LO2 Set up a network and apply access, authentication and configuration measures to protect confidentiality, integrity and availability of data and services**

To achieve this learning outcome, students must demonstrate knowledge and understanding through installing and configuring network components and applying controls to support secure access to data and services.

Rationale:

This learning outcome introduces students to the foundational practice of configuring digital networks and applying security measures, which underpin level 3 Digital pathways. By working with network components and applying access, authentication and configuration controls, students develop an understanding of how digital systems are set up and protected within defined contexts. Working with clearly defined network environments provides an accessible scope while building stretch towards level 3 study. This provides a coherent stepping-stone for progression to level 3 including T Levels, V Levels or A Levels, where students may engage with more complex networking and cyber security practices and system administration are required.

The learning outcome also strengthens key transferable skills, including problem solving when identifying risks and selecting appropriate controls, literacy when documenting configurations clearly, and digital skills when using tools to configure devices and apply security settings. Students develop confidence in setting up systems for a defined purpose and explaining how security measures support safe and reliable operation, reflecting expectations encountered in real-world digital contexts.

To do this, students are expected to apply the following knowledge and understanding:

- the operation of digital networks through connected devices, infrastructure components and software governed by communication protocols
- communication between devices and connected systems within digital networks
- the meaning of identity, confidentiality, integrity and availability in relation to protecting data and services
- the causes of security risks arising from insecure access, weak authentication methods, unpatched software and misconfigured network settings
- the role of authentication measures, access permissions and configuration settings in protecting data and services
- the contribution of industry standards and consistent configuration practices for safe and reliable digital networks

## PROPOSED SUBJECT CONTENT FOR CONSULTATION

- the role of digital tools and AI-enabled systems in generating automated configuration advice, and the need to review and validate those outputs to ensure security and suitability

In working to achieve the learning outcome, students must be able to:

- apply authentication requirements, access controls, update procedures and data protection measures to digital systems
- apply configuration actions relating to user accounts, permissions and security settings in line with defined security procedures
- apply procedures for secure access, authentication and system use
- review security-related information to identify slow response times, repeated errors, failed updates and connectivity interruptions, and what these indicate about system quality
- recognise signs of unexpected and anomalous system activity
- use log files, monitoring dashboards and system alerts to view and interpret security-related information
- record observations clearly and accurately
- escalate potential cyber security concerns in line with security procedures
- apply protective actions to systems
- communicate potential security concerns clearly to colleagues and supervisors
- handle security-related information in line with policies and procedures for privacy and confidentiality

Transferable skills that may be developed and demonstrated through this learning outcome include:

- problem solving when identifying risks and selecting appropriate configuration controls
- recording technical information clearly when documenting network configurations and security arrangements
- communication in explaining how security measures protect data and services
- digital capability in configuring devices and applying authentication and access controls

## PROPOSED SUBJECT CONTENT FOR CONSULTATION

Work-related behaviours that may be demonstrated through engagement with this learning outcome include:

- responsible
- professional
- perceptive

## PROPOSED SUBJECT CONTENT FOR CONSULTATION

### **LO3 Plan, develop and test a programming solution in order to meet a brief**

To achieve this learning outcome, students must demonstrate knowledge and understanding through planning, developing and testing a coded solution that fulfils the requirements of a defined brief.

Rationale:

This learning outcome introduces students to the foundational practice of developing programming solutions, which underpins level 3 Digital pathways. By working with defined problems and briefs, students plan, develop and test coded solutions, building an understanding of how structured logic and algorithms are used to produce digital outcomes. Working with clearly defined programming tasks provides an accessible scope while building stretch towards level 3 study. This provides a coherent stepping-stone to level 3 including T Levels, V Levels or A Levels, where students may engage with more advanced programming and automation and complex software development.

The learning outcome also strengthens key transferable skills, including problem solving when identifying and correcting errors, literacy when interpreting briefs and documenting solutions, and digital skills when using development tools to create and test code. Students develop confidence in structuring solutions, testing outcomes and explaining how their solution meets an intended purpose, reflecting expectations encountered in real-world digital contexts.

To do this, students are expected to apply the following knowledge and understanding:

- the stages of programming solution development and their role in meeting an intended purpose
- the role of algorithms as ordered instructions that determine solution behaviour
- the relationship between algorithms, program code and solution outputs
- the role of structured logic and algorithms in the design of digital solutions
- the use of developer-written and externally sourced code within digital solutions and the need to comply with licensing requirements
- the effect of logic errors, syntax errors and incorrect conditions on program behaviour
- the role of automated and AI-enabled tools in generating code suggestions, and the need to review, test and understand these outputs before use
- the role of testing approaches in confirming that programming behaves as expected

## PROPOSED SUBJECT CONTENT FOR CONSULTATION

In working to achieve the learning outcome, students must be able to:

- plan a programming solution to meet a given brief
- develop a programming solution by writing and integrating code
- use appropriate software tools to run and test the code within a solution
- apply a logical, step-by-step approach when developing and refining code
- test the solution to confirm it produces the expected outcome
- identify and correct errors in code
- communicate outcomes clearly using concise explanations and structured documentation

Transferable skills that may be developed and demonstrated through this learning outcome include:

- problem solving when identifying errors and refining programming solutions
- planning and organisation when structuring and developing programming solutions
- communication in explaining solution behaviour and testing outcomes
- digital capability in developing, running and testing program code

Work-related behaviours that may be demonstrated through engagement with this learning outcome include:

- persistent
- focused
- adaptable

## **LO4 Plan and configure hardware and software components in order to deliver a functional digital product**

To achieve this learning outcome, students must demonstrate knowledge and understanding by planning tasks and configuring hardware and software components to produce a functional digital product.

Rationale:

This learning outcome introduces students to the foundational practice of planning and configuring digital products, which underpins level 3 Digital pathways. By working with hardware and software components, students plan tasks and configure systems to produce a functional digital product, developing an understanding of how components interact to meet defined purposes. Working with digital products of defined scope provides an accessible context while building stretch towards level 3 study. This provides a coherent stepping-stone to level 3 including T Levels, V Levels or A Levels, where students may engage with more complex system integration and configuration, project delivery and maintenance practices.

The learning outcome also strengthens key transferable skills, including planning and organisation when sequencing tasks and managing resources, problem solving when identifying faults and adjusting configurations, and digital skills when configuring systems and verifying operation. Students develop confidence in producing functional outcomes and communicating configuration decisions clearly, reflecting expectations encountered in real-world digital contexts.

To do this, students are expected to apply the following knowledge and understanding:

- the role of planning tasks, sequencing activities and allocating resources when delivering a digital product
- the interaction between hardware and software components in enabling product functionality
- the role of user interface elements and digital content in supporting the usability of a digital product
- the role of component compatibility and system requirements in assembling a functional digital product
- the influence of dependencies between components on overall product operation
- the occurrence of faults during configuration and operation and the need for checking, diagnosis and corrective action
- the contribution of maintenance activities comprising updates, checks and troubleshooting to continued product performance and reliability

## PROPOSED SUBJECT CONTENT FOR CONSULTATION

- factors that affect the energy use, resource efficiency and sustainability of digital systems and devices
- the role of digital tools, automation features and AI-enabled systems in generating configuration and supporting system setup, and the need to check such outputs for suitability for the intended product

To enable students to achieve the learning outcome, students must be able to:

- plan and sequence tasks and resources to support delivery of a digital product
- configure hardware and software components to achieve a functional digital product
- verify product operation by checking that components function together as intended
- perform routine maintenance activities to support continued operation
- record and communicate configuration and maintenance activity clearly to others

Transferable skills that may be developed and demonstrated through completion of this learning outcome include:

- planning and organisation in sequencing tasks and managing resources to deliver a digital product
- problem solving when identifying faults and adjusting configurations
- recording information accurately when documenting configuration and maintenance activity
- digital capability in integrating hardware and software components to achieve a functional product

Work-related behaviours that may be demonstrated through engagement with this learning outcome include:

- organised
- flexible
- committed

## **LO5 Identify and communicate security weaknesses and associated risks in order to support improvement and troubleshooting**

To achieve this learning outcome, students must demonstrate knowledge and understanding by identifying security weaknesses and communicating risks and recommended actions clearly.

Rationale:

This learning outcome introduces students to the foundational practice of identifying security weaknesses and understanding their associated risks, which underpins level 3 Digital pathways. By working with defined digital scenarios, students identify weaknesses such as weak authentication, unpatched software and misconfigured settings, and consider the possible impact on the confidentiality, integrity and availability of systems and data. Working with clearly defined scenarios provides an accessible scope while building stretch towards level 3 study. This provides a coherent stepping-stone to level 3 including T Levels, V Levels or A Levels, where students may engage with more complex cyber security investigation practices, risk assessment and monitoring and incident response.

The learning outcome also strengthens key transferable skills, including analytical reasoning when recognising weaknesses and assessing potential impact, literacy when communicating risks and recommended actions clearly, and digital skills when using tools to record and organise security-related information. Students develop confidence in explaining security concerns in a structured and responsible way, using appropriate terminology and reflecting expectations encountered in real-world digital contexts.

To do this, students are expected to apply the following knowledge and understanding:

- the causes of security weaknesses, including weak authentication methods, unpatched software and misconfigured system and network settings
- the impact of security weaknesses on the confidentiality, integrity and availability of systems, devices and data
- the role of workplace policies and procedures governing identification and reporting of security issues
- the role of structured documentation and consistent terminology in communicating security concerns
- the role of automated security scanning tools and AI-enabled systems in identifying potential vulnerabilities and the need to interpret and verify such findings

## PROPOSED SUBJECT CONTENT FOR CONSULTATION

- the importance of responsible and ethical handling of security information when reporting vulnerabilities
- the use of digital tools in recording, organising and reviewing security-related information

In working to achieve the learning outcome, students must be able to:

- recognise security weaknesses within defined digital scenarios
- explain the potential impact of identified weaknesses on systems and data
- recommend actions that support security improvement and troubleshooting
- communicate security issues clearly and in a structured manner for different audiences
- use digital features to support drafting, reviewing and organising security-related information

Transferable skills that may be developed and demonstrated through this learning outcome include:

- analytical reasoning when identifying security weaknesses and assessing their potential impact
- professional communication in presenting risks and recommended actions clearly
- recording information clearly when producing structured documentation of security issues
- digital capability in recording and organising security-related information

Work-related behaviours that may be demonstrated through engagement with this learning outcome include:

- attention to detail
- professional

## PROPOSED SUBJECT CONTENT FOR CONSULTATION

### **LO6 Select and apply reliable digital sources to produce evidence-based recommendations for an intended purpose**

To achieve this learning outcome, students must demonstrate knowledge and understanding through selecting and evaluating digital information in order to produce justified recommendations.

Rationale:

This learning outcome introduces students to the essential research and evaluation practices that underpin all level 3 Digital pathways. This extends the data and information practices introduced in Learning Outcome 1. By identifying and assessing the reliability of digital sources, students develop the foundational skills needed to make evidence-based recommendations which are a core expectation across T Levels, V Levels and the level 2 Digital Apprenticeship Standard. Working with clearly defined online materials ensures that students can focus on recognising trustworthy information, checking accuracy, and selecting sources appropriate to a defined purpose. This provides a coherent stepping-stone for progression to level 3 study T Levels, V Levels or A Levels, where students will engage with more complex research, evaluation and evidence-based decision-making.

The learning outcome also strengthens key transferable skills: literacy (summarising information clearly, referencing sources), critical thinking (judging credibility, comparing evidence), and digital skills (searching effectively, using digital applications to capture and organise findings). Students learn to justify their recommendations using evidence and to communicate their reasoning in a clear, audience-appropriate format.

To do this, students are expected to apply the following knowledge and understanding:

- variation in the reliability, accuracy, authority and purpose of digital information
- the role of comparing information across multiple sources in supporting accurate conclusions
- the influence of bias within digital information on interpretation and recommendations
- the potential for automated and AI-enabled content generation systems to produce inaccurate, misleading or fabricated information (sometimes referred to as hallucinated outputs), and the need to verify such information against reliable sources
- the role of referencing practices in ensuring transparency and traceability of sources

## PROPOSED SUBJECT CONTENT FOR CONSULTATION

- the role of workplace procedures governing acknowledgement and recording of information sources

In working to achieve the learning outcome, students must be able to:

- identify digital sources that are relevant to a defined purpose
- check information across sources to confirm key points
- select information that directly supports an evidence-based recommendation
- acknowledge and reference sources used
- communicate recommendations clearly, showing how evidence supports conclusions
- use search, formatting and checking functions within digital applications to support drafting, reviewing and organising information

Transferable skills that may be developed and demonstrated through this learning outcome include:

- research skills in locating and selecting relevant digital information
- analytical reasoning when comparing information across sources to support conclusions
- communication in presenting evidence-based recommendations clearly
- digital capability in organising information and referencing sources appropriately

Work-related behaviours that may be demonstrated through engagement with this learning outcome include:

- perceptive
- reflective

## Annex 1: Glossary of Terms

Term	Definition
<b>Access permission</b>	A setting that controls which users, devices or systems are allowed to view, use or modify specific data, systems or services.
<b>Algorithm</b>	A defined sequence of instructions that a computer follows to process inputs and produce an output or solve a problem.
<b>Artificial intelligence (AI)</b>	Digital systems or tools that analyse data using algorithms or models in order to generate outputs such as predictions, insights, classifications or recommendations.
<b>Authentication</b>	A security process used to confirm the identity of a user, device or system before access to data, systems or services is granted.
<b>Automation</b>	The use of programmed instructions or scripts that allow digital systems to perform tasks or processes automatically with limited human intervention.
<b>Availability</b>	The condition in which information, systems or services are accessible and usable by authorised users when required.
<b>Brief</b>	A statement that defines a task, including its purpose, requirements, constraints and intended outcome.
<b>Chart</b>	A graphical representation of data used to show patterns, comparisons or relationships between values.
<b>Code</b>	Instructions written in a programming or scripting language that tell a computer how to perform specific tasks or operations.
<b>Component</b>	A hardware or software element that forms part of a larger digital system or product and contributes to its operation.
<b>Confidentiality</b>	The protection of information so that it is only accessible to authorised users and is not disclosed to unauthorised individuals or systems.
<b>Configuration</b>	The process of setting or adjusting parameters in hardware or software so that a system operates correctly and securely for its intended purpose.
<b>Control (security control)</b>	A measure, safeguard or procedure designed to reduce risks to systems, services or data.
<b>Dataset</b>	A structured collection of related data items organised so that they can be stored, processed, analysed or presented.

## PROPOSED SUBJECT CONTENT FOR CONSULTATION

Term	Definition
<b>Dependency</b>	A relationship in which one component, process or service relies on another in order to function correctly.
<b>Digital network</b>	A group of connected devices and infrastructure that communicate with each other to exchange data and provide access to digital services.
<b>Digital product</b>	A functioning digital output created to meet a defined purpose or user need.
<b>Digital tool</b>	Software, application or digital feature used to support the completion of a task.
<b>Error</b>	A mistake or fault in code, data or configuration that causes a system or program to produce an incorrect or unexpected result.
<b>Functional</b>	Operating correctly and producing the intended result for a designed purpose.
<b>Integrity</b>	The accuracy, completeness and reliability of data, ensuring that information has not been altered in an unauthorised way.
<b>Logical</b>	Based on clear and ordered reasoning in which steps follow a defined and consistent sequence.
<b>Maintenance</b>	Activities such as updates, checks, repairs or adjustments carried out to ensure that systems or products continue to operate effectively.
<b>Pattern</b>	A repeated or noticeable relationship or trend within data.
<b>Passphrase</b>	A sequence of words used to verify identity and allow secure access to a system, device or service.
<b>Protocol</b>	A defined set of rules that governs how data is transmitted and received between devices or systems.
<b>Program</b>	A complete set of code that performs a specific function or set of tasks when executed by a computer.
<b>Programming</b>	The process of designing, writing, testing and refining code to create a digital solution that meets a defined purpose.
<b>Recommendation</b>	A proposed course of action that is supported by analysis, evidence or evaluation.
<b>Reliability (of a source)</b>	The degree to which information from a source can be trusted as accurate, credible and appropriate for the intended purpose.

## PROPOSED SUBJECT CONTENT FOR CONSULTATION

<b>Term</b>	<b>Definition</b>
<b>Risk</b>	The possibility that an event or action may cause harm, loss or disruption to systems, data or services.
<b>Secure handling</b>	Managing data, devices or systems in ways that prevent unauthorised access, loss, misuse or disclosure.
<b>Sequencing</b>	Arranging tasks, instructions or steps in the correct logical order so that a process operates as intended.
<b>Source (digital source)</b>	A location from which information, data or code is obtained.
<b>Test</b>	An activity carried out to check whether a system, program or component behaves as expected.
<b>Vulnerability</b>	A weakness in a system, configuration, process or control that could be exploited to compromise security, functionality or reliability.
<b>Visualise</b>	To present information or data in graphical or pictorial form to support interpretation and understanding.

## Annex 2: Content Mapping

### Link to Level 2 Occupational Certificate core content

There is currently no Occupational Certificate in this subject area. This will be reviewed at a future date.

### Link to V Levels

The following aspects of Foundation Certificate Digital Systems and Data content directly relate to V Level Digital Systems and Data content, to provide a stepping-stone and clear line of sight to level 3 study:

- data handling, analysis and communication
- digital systems, configuration and cyber security
- programming logic and structured solution design
- system setup, testing and performance checking
- cyber security awareness, risk identification and response
- evidence-based analysis and decision-making

The Level 2 Foundation Certificate introduces foundational digital concepts and practices, including data handling, digital systems, programming logic, configuration, cyber security and research. While the Level 3 V Level builds on these foundations and extends this knowledge through their application of defined work-related purposes and contexts, including system configuration and testing, interpreting system information, identifying and responding to cyber security concerns, data analysis and designing digital solutions.

The following aspects of content directly relate to content specified in the Digital Systems and Data V Level:

Foundation Certificate reference	V Level reference	Knowledge and understanding	Skills
LO1: Data types and structured datasets	WRP1	Data structure, format, field definitions and levels of detail associated with datasets obtained from different sources.	Preparing datasets for analysis.

**PROPOSED SUBJECT CONTENT FOR CONSULTATION**

<b>Foundation Certificate reference</b>	<b>V Level reference</b>	<b>Knowledge and understanding</b>	<b>Skills</b>
LO1: Data quality and preparation	WRP1	Data quality issues including missing data, duplicates and inconsistent formatting and their impact on analysis.	Validating and preparing datasets.
LO1: Data analysis methods	WRP1	Analytical techniques including sorting, filtering, grouping, calculating totals, averages and identifying trends.	Analysing data and identifying patterns.
LO1: Data presentation	WRP1	Forms and uses of analytical outputs and principles of visual communication.	Presenting analytical findings clearly.
LO2: Digital system components	Core KU	Main components of digital systems and their roles within system structure.	Configuring digital systems to meet defined requirements.
LO2: Network configuration	Core KU	Configuration requirements relating to connectivity, storage and system behaviour. LO2:	Preparing and testing system configurations.
LO2: Authentication and access control	WRP2	Authentication requirements, user permissions and access control measures.	Applying security protocols and configuration controls.
LO2: Security risks	WRP2	Indicators of cyber security concerns and system vulnerabilities.	Recognising and responding to potential cyber security issues.
LO3: Algorithms and structured logic	WRP4	Principles of algorithms and structured coding approaches.	Structuring digital solutions using logical steps.
LO3: Program development	WRP4	Relationship between algorithms, program code and outputs.	Developing programming solutions using code.
LO3: Testing programming solutions	WRP3	Purpose of testing digital systems and role of quality assurance.	Testing and refining solutions and evaluating readiness.

## PROPOSED SUBJECT CONTENT FOR CONSULTATION

Foundation Certificate reference	V Level reference	Knowledge and understanding	Skills
LO4: Hardware and software interaction	Core KU	Relationship between system components and system behaviour.	Configuring system components to deliver functionality.
LO4: System testing and readiness	Core KU	Relationship between requirements, test outcomes and system readiness.	Verifying system performance and readiness.
LO4: Technical fault identification	Core KU	Nature and causes of technical faults and structured diagnostic approaches.	Diagnosing faults and troubleshooting systems.
LO5: Security vulnerabilities	Core KU / WRP2	Configuration-related risks and system vulnerabilities	Investigating system activity and identifying risks
LO5: Security impact	WRP2	Implications of cyber threats and impact on systems and services.	Applying security procedures and protective actions.
LO5: Security reporting	WRP2	Policies and procedures relating to incident reporting and secure handling of information.	Communicating and escalating security issues.
LO6: Reliability of digital information	WRP1	Data limitations, bias and reliability of datasets and sources.	Evaluating information sources.
LO6: Evidence-based conclusions	WRP1	Relationship between analysis, data quality and confidence in conclusions.	Drawing justified conclusions.
LO6: Communication of evidence	Core KU	Communication principles in technical and digital contexts.	Presenting evidence-based recommendations.
LO6: Collaborative interpretation	Core KU	Role of collaboration and shared understanding in interpreting information.	Supporting decision-making through shared analysis.

### Link to T Levels

The following aspects of Foundation Certificate Digital Systems and Data content are also covered in T Level Digital systems and intelligence qualifications, to provide a stepping-stone and clear line of sight to level 3 study.

## PROPOSED SUBJECT CONTENT FOR CONSULTATION

The Digital Systems and Data Foundation Certificate introduces core digital knowledge and transferable capabilities required for progression to level 3 Digital pathways, through learning outcomes covering:

- data handling
- programming
- system configuration
- networking
- cyber security awareness
- evidence-based digital practice

The Foundation Certificate prepares students for progression to multiple T Level qualifications including Digital Software Development, Digital Support and Security, and Digital Data Analytics, which extend into specialised technical knowledge and workplace application leading to roles in software development, cyber security, IT support and data analysis.

The following aspects of content directly relate to content specified in the core of the T Levels:

<b>Foundation Certificate reference</b>	<b>T Level reference</b>	<b>Knowledge and understanding</b>	<b>Skills</b>
LO1: Clean, interpret and visualise a dataset	Digital Data Analytics – Data preparation and analysis	Data types, structured datasets and data quality issues.	Preparing and validating datasets.
LO1: Clean, interpret and visualise a dataset	Digital Data Analytics – Data analysis and visualisation	Analytical techniques for identifying patterns and trends in data.	Analysing datasets and interpreting outputs.
LO1: Clean, interpret and visualise a dataset	Digital Data Analytics – Communication of insights	Use of charts, tables and summaries to communicate findings.	Presenting insights to technical and non-technical audiences.

**PROPOSED SUBJECT CONTENT FOR CONSULTATION**

LO2: Set up a network and apply access and authentication controls	Digital Support and Security – Digital environments and systems	Components of digital systems including devices, networks and software.	Configuring digital systems and connectivity.
LO2: Set up a network and apply access and authentication controls	Digital Support and Security – Security protocols	Authentication methods, access permissions and secure configuration.	Applying security controls and monitoring system behaviour.
LO2: Set up a network and apply access and authentication controls	Digital Support and Security – Cyber security awareness	Indicators of vulnerabilities or suspicious activity in digital systems.	Recognising and responding to potential security risks.
LO3: Plan, develop and test a programming solution	Digital Software Development – Programming and problem solving	Algorithms, structured logic and program design.	Structuring digital solutions and writing code.
LO3: Plan, develop and test a programming solution	Digital Software Development – Software development lifecycle	Planning, developing and testing coded solutions.	Developing and testing digital solutions.
LO4: Configure hardware and software to deliver a functional digital product	Digital Support and Security – System configuration and testing	Interaction between hardware, software and network components.	Configuring and testing digital systems.
LO4: Configure hardware and software to deliver a functional digital product	Digital Support and Security – Fault identification and system reliability	Technical faults affecting digital systems and diagnostic processes.	Troubleshooting and verifying system performance.

## PROPOSED SUBJECT CONTENT FOR CONSULTATION

LO5: Communicate security weaknesses and risks	Digital Support and Security – Cyber security monitoring	Security vulnerabilities including weak authentication and misconfigured systems.	Investigating system behaviour and identifying risks.
LO5: Communicate security weaknesses and risks	Digital Support and Security – Security procedures and escalation	Policies and procedures relating to privacy, confidentiality and incident reporting.	Reporting and escalating cyber security concerns.
LO6: Select and apply reliable digital sources	Digital Data Analytics – Data reliability and governance	Reliability, bias and limitations of digital information and datasets.	Evaluating information sources.
LO6: Select and apply reliable digital sources	Digital Software Development / Data Analytics – Decision-making using digital information	Relationship between data, evidence and decision-making.	Communicating evidence-based conclusions.

### Link to A Levels

The following aspects of Foundation Certificate Digital Systems and Data content are also covered in A Level computer science qualifications to provide a stepping-stone and clear line of sight to level 3 study.

The Digital Systems and Data Foundation Certificate introduces core digital concepts including:

- data handling
- networks
- programming fundamentals
- system configuration and digital security awareness

These areas provide a preparatory foundation for A Level Computer Science by developing computational thinking, problem solving and digital systems awareness. However, the Foundation Certificate does not cover advanced level 3 content such as algorithm efficiency, formal data structures, programming paradigms, Boolean algebra or

## PROPOSED SUBJECT CONTENT FOR CONSULTATION

database design. This ensures that the qualification supports progression while maintaining clear differentiation between level 2 and A Level study.

The following aspects of content directly relate to content specified in A Levels:

<b>Foundation Certificate reference</b>	<b>A Level reference</b>	<b>Knowledge and understanding</b>	<b>Skills</b>
LO1: Data cleaning and visualisation	Data representation	Data types: numerical, categorical, text and date/time data.	Interpreting datasets; recognising patterns; applying numeracy in digital contexts.
LO1: Data cleaning and visualisation	Data management	Methods of capturing, selecting and managing data to produce information.	Organising and preparing datasets for analysis.
LO1: Data cleaning and visualisation	Computational thinking	Interpreting patterns and relationships in data.	Analytical reasoning; drawing conclusions from data.
LO1: Data cleaning and visualisation	Communication of information	Presenting data using tables and charts.	Communicating findings clearly using visual and written formats.
LO2: Networks and security configuration	Computer systems architecture	Role of devices, infrastructure components and software in digital networks.	Configuring digital systems and devices.
LO2: Networks and security configuration	Networks and protocols	Characteristics of networks and the role of communication protocols.	Understanding system connectivity and communication.
LO2: Networks and security configuration	Cybersecurity fundamentals	Confidentiality, integrity and availability of data and services.	Identifying risks and applying security controls.
LO3: Planning, developing and testing a programming solution	Fundamentals of programming	Relationship between algorithms, program code and solution outputs.	Designing program logic and structured solutions.

**PROPOSED SUBJECT CONTENT FOR CONSULTATION**

<b>Foundation Certificate reference</b>	<b>A Level reference</b>	<b>Knowledge and understanding</b>	<b>Skills</b>
LO3: Planning, developing and testing a programming solution	Algorithms	Algorithms as ordered instructions to solve problems.	Computational problem solving and logical reasoning.
LO3: Planning, developing and testing a programming solution	Program development	Debugging and correcting syntax and logic errors.	Testing and refining code.
LO3: Planning, developing and testing a programming solution	Software development process	Planning, writing and testing a coded solution.	Applying structured development processes.
LO4: Configuring hardware and software systems	Computer systems	Interaction between hardware and software components.	Configuring systems to achieve a functional and efficient digital system.



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