T Level Foundation Year Supporting progression to T Level

National technical outcomes
Digital route

July 2023

Contents

Introduction

This document sets out national technical outcomes (NTOs) for the T Level Foundation Year (formerly the T Level Transition Programme), relevant to a particular T Level route. Delivery of the NTOs is expected as part of the programme, as set out in the [Framework for Delivery](#) and the NTOs will provide the basis for the content of T Level Foundation Qualifications that will be available from 2026. The T Level Foundation Year is a level 2 study programme to prepare young people for progression onto a T Level in a particular T Level route. There are NTOs for each T Level route.

Updating the national technical outcomes

We will review whether the NTOs need updating if and when there are any changes to T Levels or their content. As the NTOs are high level and relevant across a T Level route, we expect that they may need updating only where there are significant changes to T Level content. Should the NTOs need revising, we would expect AOs to review their qualification specification.

Who is this publication for?

This document is for anybody with an interest in the T Level Foundation Year national technical outcomes. This includes:

- Schools, colleges, training providers and their representative bodies
- Awarding organisations and their representative bodies
- Third sector and representative organisations
- Students, parents/guardians/carers
- Employers

Contact

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National technical outcomes explained

The NTOs provide students with an introductory foundation for any T Level in their chosen T Level route. They consist of a minimum of three outcomes that students are expected to be able to demonstrate by the end of the programme, and the knowledge and skills they will need to develop and apply to demonstrate the outcomes. The outcome-based structure of the NTOs is important to prepare students for the nature of T Levels.

The knowledge and skills within each outcome consist of topic areas and the underpinning content to be covered (the bullet points). They relate to the content of the T Levels in the route and are appropriate for level 2 study. Behaviours integral to achieving the outcome, and which can be explicitly assessed, are embedded into the skills. It is intended that students will typically acquire the knowledge and skills through realistic employment-related contexts and situations, and the outcomes are worded in a way that allows them to be applied in different contexts. Two routes – Agriculture, environmental and animal care and Health and science – include an outcome based on applying knowledge only.

Supplementary information is included for education providers to use, at their discretion, to support teaching and learning. For each outcome there is:

- an explanation for the combination of outcomes selected for the route
- the rationale for each outcome
- how the outcomes could be delivered in combination
- how to set the level of demand to meet students' development needs
- illustrative examples of how breadth and depth could be introduced into teaching and learning
- opportunities to support the contextualised development and application of English, maths and digital skills, and
- examples of behaviours that are integral to the outcome but not expected to be assessed explicitly.

The NTOs are intended to provide a minimum foundation for the T Level route, not competence in any occupation. They are designed to be taught within approximately 120-150 guided learning hours (GLH), with each outcome designed for approximately 30-50 GLH, based on the minimum level of knowledge and skills essential for demonstrating the outcomes. This allows education providers to add more breadth or depth, according to students' development needs, whilst ensuring there is sufficient time for the other components of the T Level Foundation Year.

A glossary of terms is provided in the Annex.

Information for awarding organisations

- Each T Level Foundation Qualification must be based on the NTOs for a single T Level route.
- Awarding organisations will be expected to adhere to the principles for developing the NTOs into qualification content.
- Awarding organisations may also refer to the supplementary information should they wish to do so, but this is not required.
- T Level Foundation Qualifications must focus on students' demonstration of the outcomes in the NTOs, through the application of relevant knowledge and skills. The outcomes are designed to be demonstrated independently or in combination.
- The outcomes are broad and applicable to different contexts but assessments could be set in a single context.
- In determining their assessment design, awarding organisations will need to refer to Ofqual's conditions, requirements and guidance for these qualifications.

Principles for developing the national technical outcomes into qualification content

Principle 1: Qualification content must include all the outcomes for the route and the specified knowledge and skills

This will ensure an overall level of consistency across different qualifications in the same route. Assessment must focus on the demonstration of these outcomes. The knowledge and skills topic area headings and the underpinning bullets reflect the minimum needed to demonstrate the outcomes, so this is expected to be included in the qualification content. All the optional content will need to be developed, where optionality between or within an outcome is specified in the NTOs for the route, and this optionality must be available to students taking the qualification.

Principle 2: Elaboration of the detailed qualification content must fit within the guideline size of 120 to 150 GLH for these qualifications, be relevant to demonstrating the outcomes and must not constrain skills development

The guideline size reflects that the NTOs were designed so that the minimum knowledge and skills required to demonstrate the outcomes can be taught within this range, excluding assessment time. The knowledge and skills within the NTOs are expressed in high-level terms so they will need to be elaborated on to develop the detailed content to be taught. Detailed content should not be included where it is not relevant to demonstrating the outcome. Skills development takes time and is an important part of the NTOs as preparation for T Levels, so this should be allowed for when determining the detailed qualification content.

Principle 3: Additional content may be proposed but we would expect this to be minimal; it must be relevant to demonstrating the outcome and fit within the size guideline

The rationale for proposing to include any additional content, above the minimum content set out in the NTOs, must be clear. Any extra content that is proposed should ensure the qualification size still fits within the size guideline for these qualifications and it does not change the nature of the outcome. Additional skills content, particularly transferable skills, should be prioritised over proposing extra knowledge content, as skills development is important preparation for T Levels. No additional outcomes may be introduced.

National technical outcomes: Digital route

All students are to develop the knowledge and skills to be able to demonstrate the following three outcomes, by the end of the programme:

Outcome 1 (O1). Analyse data to meet the requirements of client briefs
Outcome 2 (O2). Plan for cyber security resilience
Outcome 3 (O3). Apply coding skills to produce a digital project output

Introductory rationale

Preparing for progression to T Levels in the Digital route

These national technical outcomes are designed to support progression to either the Digital Production, Design and Development T Level (introduced from 2020), or the Digital Support Services T Level, or the Digital Business Services T Level (both introduced from 2021).

The outcomes introduce theories, concepts and principles that are relevant to the core of all three T Levels within that route. They also allow for technical skills development related to all three T Levels: data manipulation, planning for cyber security resilience, programming and providing digital solutions. The outcomes allow for the development of transferrable skills such as investigating and critical thinking.

As a result, they provide an insight into the content of all three T Levels, enabling students to make informed choices about which T Level from within the route is most appropriate for their needs and aspirations.

The outcomes will provide opportunities for students to learn about different occupations across the Digital route. For example, when planning for cyber resilience, students learn about security and risk mitigation, leading to an opportunity to learn about associated occupations such as a security administrator, support technician or web developer, whether they be in a dedicated software production organisation, or an 'in house' Information Technology team managing user services. This will support students to make informed choices about their next step and which T Level is most appropriate for their career aspirations.

Setting the level to meet individual student needs

For level 2, the activities will be relatively straightforward and routine, set in contexts that are familiar to students.

Providers may want to introduce stretch and challenge for students by introducing new types of contexts that are more complex and unfamiliar. For example, having researched competitor environment, students could produce a webpage or website with enhanced requirements and therefore use more complex programming language, for an employer rather than their immediate peer group; this would involve testing at various production stages.

Holistic delivery of outcomes

The outcomes can be delivered independently of each other, with each focussed on different types of contexts. This allows the student to demonstrate their ability to, for example, produce a digital project output that is ambitious and aspirational, whilst applying data analysis skills that are relatively straightforward and routine.

However, they can also be delivered together in combination. For example, analysing information and data (O1) could lead to the production of a digital solution (O3) such as a webpage which could incorporate cyber security resilience planning (O2). The holistic nature of this approach would need to ensure that students have the capability to follow the outcomes throughout and ensure that they are not penalised and restricted by any initial ideas to meet early outcomes.

Outcome 1: Analyse data to meet the requirements of client briefs

Rationale

This outcome focuses on using data analysis techniques. The knowledge is based on the core content of all three T Levels. The outcome provides an opportunity to: develop skills in formatting and presenting data securely for analysis, using basic methods; analyse structured and unstructured data, to support a variety of business contexts; blend data from multiple sources, as directed; and apply ethical principles when manipulating data.

The data and learning topics from the core content of the T Level were included as they were considered to involve concepts that providers considered potentially challenging for students to grasp. Introducing these elements within familiar and straightforward contexts should enable students to grasp the fundamental concepts, principles and theories. This should then raise their confidence in their ability to learn and enable them to cope with grasping new concepts as they move to level 3 study.

In addition students will develop the transferable skill of investigating in response to a client brief.

It is envisaged that students will interact with 'stakeholders' to present their analysis. This could be by presenting the issues to employer representatives or non-familiar individuals who are role playing such a group. This is reflected in the oral communication skills included in the content.

Numeracy skills such as those required to construct tables, charts and graphs will support students in their analysis and interpretation of data when meeting the requirements of client briefs.

Digital skills are developed to support the presentation of data in graphical format which will be enhanced through the development of communication skills.

There is an opportunity for providers to identify local employers that have a requirement for data investigation in a range of sectors and functional areas. It is envisaged that students will be provided with a brief. Responding to a client brief will provide a real purpose for an investigation and the problem to be solved. This might be about: analysing data for testing a new product, sizing and understanding new markets, a dataset of service support issues put forward for resolution, or data about events that have significance for an organisation, such as an unexplained surge in sales. This data might be used to guide business decisions.

It is expected that students will be provided with information and data necessary to undertake the analysis as the broad purpose of an occupation in data analysis is to source, format and present data securely in a relevant way for analysis.

Knowledge

Information and data

- Sources of data and information used for digital projects: purpose, typical content, typical format, terminology and differences between them

- Types of information and data created and recorded when analysing problems

- Factors to consider when using information and data: confidentiality, privacy, intellectual property and security

- Types of documents used to record primary data

- Key elements of data: qualitative, quantitative, primary, secondary, discrete, continuous, structured, unstructured; advantages and disadvantages and suitability for purpose

- Client brief: purpose, characteristics, terminology and place

Investigation

- Data collection: methods, purpose, suitability and types of data

- Validity of information and data: accuracy, reliability, currency and bias

Communication

- Principles of effective communication: two-way process (send and receive messages), methods (verbal, non-verbal) and styles (formal, informal)

- Reading: principles, reading for comprehension, identifying salient points, summarising key points and synthesising information from different sources

- Vocabulary: technical and non-technical and use to achieve particular effects and for different purposes

- Listening techniques: active and deep

- Non-verbal communication: meaning of different types of body language and how they may be presented, types and value of images and support materials as visual aids and impact of non-verbal communication to support comprehension of key messages

- Oral communication: pitch, tone and intonation and their impact on how a message is received

- Engaging with an audience: in conversation and in discussion

Numeracy

- Data analysis: techniques used to identify patterns and variances, trends, correlation, causation, interpolation, extrapolation and predictions

- Descriptive statistics: purpose, suitability for different situations, techniques – frequency, central tendency (mean, median, mode) and variation (range)

- Numbers and the number system: techniques for application of the four operations (addition, multiplication, division, subtraction), working with whole numbers, fractions, decimals and percentages

- Visual representation of data: techniques, formats, benefits and limitations

Digital

- Software: feature, functions, applications for data analysis and production

- Management of digital information and data: classification and organisation, naming conventions, storage systems, protection methods, accessibility and formats

- Manipulation of digital data: data cleansing, data blending and data merging

Skills

Investigating

- Develop search criteria and queries to support an investigation

- Identify sources of information and data required for an investigation

- Reference sources of information

- Interrogate information and data for validity

- Design tests related to search criteria and search queries

Communicating

- Synthesise information and data from different sources

- Summarise information and data

- Apply technical language in relevant contexts

- Apply active listening techniques when presenting

- Apply oral communication techniques to obtain and clarify information and data

- Apply oral communication skills to clearly articulate a message

- Apply non-verbal communication techniques to support communication

- Engage in discussion listening to and responding to questions and feedback

- Shows respect for others' views and opinions

- Apply an inclusive approach to engaging with others

- Apply communication techniques to secure audience understanding

- Interpret information and data presented in different formats

Numeracy

- Construct tables, charts and graphs to present information and data

- Apply formula to calculate variance

- Apply statistical techniques to calculate common averages and spread

Interpreting data

- Identify common features in data sets presented numerically and graphically

- Identify trends in data

- Identify patterns in data

- Identify variances in data

- Identify measures of central tendency in data

- Identify frequencies in data

- Identify correlation in data

- Identify causal relationships in data

Digital skills

- Organise digital information

- Store digital information securely

- Retrieve digital information

- Apply software functions to input and combine text and other source materials

- Apply software functions to format cells, rows and columns

- Apply software functions to use formulae and tools to summarise and display data

- Apply software functions to generate charts and graphs and format documents

Supplementary information to support teaching and learning

Illustrative examples: Develop breadth through:

Context

- Finance, retail, education, health, media, manufacturing and hospitality

Data

- Data cleansing
- Data blending techniques
- Merging data

Information and data

- Sources of data formats: those formats requiring future accessibility, non-proprietary, open, with documented standards; appropriate formats, image, text, audio and database
- Structured: names, dates, addresses, stock information and geolocation
- Unstructured: rich media, email, chats and sensor data

Investigation

- Purpose of data collection: role in answering questions, making decisions and making predictions about future probabilities and trends
- Reliability: social media and academic

Numeracy

- Statistics: construction of tables, charts and diagrams (including frequency), and how to interpret them and know their appropriate use, interpretation, analysis and comparisons, distributions of data sets; correlation and prediction; interpolation and extrapolation

Illustrative examples: Develop depth for stretch and challenge through:
- Complex data analysis methods

    - Prescriptive analysis
    - Narrative inquiry

- Design characteristics for data collection methods: standardised (survey), narrative (interview) and non-reactive designs

- Data gathering research tools (questionnaires, interviews, rating and attitude scales)

- The impact of digital technologies: augmented reality (AR), artificial intelligence (AI), gaming innovations (high-fidelity graphics and the metaverse, automation) on sourcing, collection, manipulation and presenting of data

Behaviours:

- Focussed
- Independent
- Perceptive

Mapping of opportunities to support students' development of English, maths and digital skills:

English

- GCSE: Critical reading and comprehension
    - Synthesise information and data from different sources
    - Summarise information and data
    - Interpret information and data presented in different formats
- GCSE: Speaking and Listening
    - Apply technical language in relevant contexts
    - Apply active listening techniques when presenting
    - Apply oral communication techniques to obtain and clarify information and data
    - Apply oral communication skills to clearly articulate a message
    - Apply non-verbal communication techniques to support communication
    - Engage in discussion listening to and responding to questions and feedback
    - Shows respect for others' views and opinions
    - Applies an inclusive approach to engaging with others
    - Apply communication techniques to secure audience understanding
    - Interpret information and data presented in different formats
- Functional skills: Reading
    - Synthesise information and data from different sources
    - Summarise information and data
    - Interpret information and data presented in different formats
- Functional skills: Speaking and Listening
    - Apply technical language in relevant contexts
    - Apply active listening techniques when presenting
    - Apply oral communication techniques to obtain and clarify information and data
    - Apply oral communication skills to clearly articulate a message
    - Apply non-verbal communication techniques to support communication
    - Engage in discussion listening to and responding to questions and feedback
    - Shows respect for others' views and opinions
    - Apply an inclusive approach to engaging with others
    - Apply communication techniques to secure audience understanding

Maths

- GCSE: Statistics
    - Construct tables, charts and graphs to present information and data
    - Apply formula to calculate variance
    - Apply statistical techniques to calculate common averages and spread
    - Identify common features in data sets presented numerically and graphically
    - Identify trends in data
    - Identify patterns in data
    - Identify variances in data
    - Identify measures of central tendency in data
    - Identify frequencies in data
    - Identify correlation in data
    - Identify causal relationships in data
- Functional Skills: Statistics
    - Construct tables, charts and graphs to present information and data
    - Apply formula to calculate variance
    - Apply statistical techniques to calculate common averages and spread
    - Identify common features in data sets presented numerically and graphically
    - Identify trends in data
    - Identify patterns in data
    - Identify variances in data
    - Identify measures of central tendency in data
    - Identify frequencies in data
    - Identify correlation in data
    - Identify causal relationships in data

Digital

- Functional skills: Using devices and handling information
    - Organise digital information
    - Store digital information securely
    - Retrieve digital information

- Functional skills: Creating and editing
  - Apply software functions to enter and format information and data
  - Apply software functions to organise digital information
  - Apply software functions to store digital information securely
  - Apply software functions to retrieve digital information
  - Apply software functions to input and combine text and other source materials
  - Apply software functions to format cells, rows and columns
  - Apply software functions to use formulae and tools to summarise and display data
  - Apply software functions to generate charts and graphs, format documents
- GDC: Processing and analysing data

  - Apply software functions to enter and format information and data
  - Apply software functions to organise digital information
  - Apply software functions to store digital information securely
  - Apply software functions to retrieve digital information
  - Apply software functions to input and combine text and other source materials
  - Apply software functions to format cells, rows and columns
  - Apply software functions to use formulae and tools to summarise and display data
  - Apply software functions to generate charts and graphs, format documents

Outcome 2: Plan for cyber security resilience

Rationale

This outcome focuses on being able to plan for cyber security resilience. Whilst there are specific occupations and also a T Level occupational specialism that focuses on cyber security, this outcome is based on the knowledge in the core content of all three Digital T Levels. A broad knowledge of security is critical for any occupation in the digital sector.

Concepts from the security and learning topics were included as they were considered to be based on real world problems, which are motivating and also challenging to grasp. Introducing these concepts within familiar and straightforward contexts should enable students to grasp the fundamental concepts, principles and theories related to different types of threats, vulnerabilities, risks and protection measures and show their ability to learn. This should then raise their confidence in their ability to learn and to enable them to cope with grasping new concepts as they move to level 3 study.

In addition to technical knowledge related to cyber security, students will also develop the transferable skill of critical thinking needed to plan for cyber security resilience.

Students will develop written communication skills through carrying out investigations where they will engage with written information to read and interpret; and through the production of clear and coherent documentation. Written communication skills will support the development of the use of technical language associated with cyber security and the clear articulation of any planning documentation.

Digital skills that are included enable students to develop the ability to use software intended for protection of assets.

Knowledge

Cyber Security

- Planning: need and stages

- Threats: types of threat actors, accidental, internal, external and malicious and evolving

- Vulnerabilities: human, physical, zero-day, system configurations, patch management and legacy platforms

- Risk: identification, threat assessment, mitigations and risk reduction and approaches to risk reduction

- Motivation: financial, intentional, accidental, challenge, social and political

Communication

- Principles of effective communication: conventions of different types of written communication and suitability for different purposes and audiences

- Reading: principles and reading for comprehension

- Spelling, punctuation and grammar (SPAG): punctuation markers, grammatical conventions and spelling of key technical and non-technical terminology

- Vocabulary: technical and non-technical and use to achieve particular effects and for different purposes

Digital

- Software: feature, functions and applications for representation of digital plans

- Management of digital information and data: storage systems, accessibility and formats

- Protection of personal, organisational, client data: legal framework, advanced malware protection; application, firewall, endpoint, web, network, email security and procedures

Skills

Cyber Security skills

- Assess cyber security risk

- Document cyber security event information whilst preserving evidence

Critical thinking

- Effective questioning to elicit information

- Evaluating pros and cons of information provided

- Apply logic and reasoned argument to information presented

- Draw evidence-based conclusions

Communicating

- Synthesise information and data from different sources

- Summarise information and data

- Apply technical language in relevant contexts

- Apply written communication techniques to produce formal reports following standard conventions

- Create documents appropriate to purpose and audience

- Produce clear and coherent texts

- Interpret information and data presented in different formats

- Apply appropriate vocabulary, grammar, form, structural and organisational features to reflect audience and purpose and context

Digital skills

- Store digital information securely

- Apply software functions to present digital plans

- Apply software functions to protect data

Supplementary information to support teaching and learning

Illustrative examples: Develop breadth through:

Contexts

- Types and size of organisations: finance, retail, telecoms, health, media, manufacturing and local authorities

Cyber Security

- Need: technology dependence, impact of breaches for individuals and organisations
- Stages: identify, protect, detect, respond and recover
- Motivation for cyber crime: Nation States, geopolitical, cyber criminals, profit, hacktivists, ideological, terrorist groups, ideological and/or violence, thrill seekers and satisfaction
- Threats: phishing, spear phishing, vishing, smishing, shoulder surfing, dumpster diving; Malware: virus, adware, ransomware, trojan, botnet, spyware; Password: brute force and dictionary attack
- Vulnerabilities: human - untrained/using their clickbaits; physical: open locks, no guards; weak system configurations: using default password on WiFi router; lack of patch management: updates

Software

- Protection: firewalls and anti-malware software

Illustrative examples: Develop depth for stretch and challenge through:

- Categories of exposures: software misconfiguration, sensitive data exposure, injection vulnerabilities, using components with known vulnerabilities, insufficient logging and monitoring, broken access control and authentication, security misconfiguration and incorrect cross-site validation
- Vulnerability assessment: components, scope and techniques, impact and vulnerability assessment tools
- Threat sources and threat identification and network reconnaissance techniques
- Apply procedures and security controls
- Disaster prevention and recovery methods

Behaviours:

- Professional
- Responsible
- Integrity

Mapping of opportunities to support students' development of English, maths and digital skills:

English

- GCSE: Critical reading and comprehension
    - Synthesise information and data from different sources
    - Summarise information and data
    - Interpret planning information and data presented in different formats
- GCSE: Writing
    - Apply technical language in relevant contexts
    - Apply written communication techniques to produce formal reports following standard conventions
    - Create documents appropriate to purpose and audience
    - Produce clear, coherent texts
    - Apply appropriate vocabulary, grammar, form, structural and organisational features to reflect audience, purpose and context
- Functional skills: Reading
    - Synthesise information and data from different sources
    - Interpret planning information and data presented in different formats
    - Summarise information and data
- Functional skills: Writing
    - Apply technical language in relevant contexts
    - Apply written communication techniques to produce formal reports following standard conventions
    - Create documents appropriate to purpose and audience
    - Produce clear, coherent texts
    - Apply appropriate vocabulary, grammar, form, structural and organisational features to reflect audience, purpose and context

Digital

- Functional skills: Using devices and handling information
    - Store digital information securely
- Functional skills: Creating and editing
    - Apply software functions to present digital plans
    - Apply software functions to protect data

Outcome 3: Apply coding skills to produce a digital project output

Rationale

This outcome focuses on the application of coding skills to produce a digital project output. The topics of digital analysis, digital environments and tools are introduced as they were considered by providers as potentially challenging for students to grasp, yet appropriate as underpinning core content for all three Digital T Levels. Introducing key concepts of computing system fundamentals and languages in familiar and straightforward contexts should enable students to grasp the fundamental concepts, principles and theories – and build on the national curriculum computing programme of study.

The inclusion of technological developments and their contribution to sustainability and business contexts recognises the importance that the digital sector plays in supporting the reduction of environmental footprint and conservation of resources.

The inclusion of the technical skill of coding was considered important to motivate and engage students who will benefit from the opportunity to apply knowledge through practical application. This could be to create, for example, a set of instructions for computers to follow, or build a programme such as a website or app. It also provides the opportunity to identify potential challenges students may encounter with practical aspects required of a T Level occupational specialism.

Students will also develop the transferable skills of planning and critical thinking. This should help to raise their confidence in their ability to learn and enable them to cope with grasping new concepts as they move to level 3 study.

There is an opportunity for students to learn about particular software tools that support different ways of communication and working which can be specific to the digital environment.

Knowledge

Programming

- Algorithms: use, interpretation and creation
- Program code and constructs: coding logic, data types, structures, input/output and operators and subprograms
- Programming languages: text and graphical based and suitability
- Requirements: definition and design thinking

Tools and equipment

- Tools: characteristics, purpose, safety, security, storage, maintenance, operation and applications

- Equipment: characteristics, purpose, safety, security, storage, maintenance, operation and applications

Sustainability

- Technological developments and their contribution to sustainability and business contexts

Project management

- Project management lifecycle: terminology, key stages and requirements at each stage

- Project planning and monitoring tools and techniques

Information and data

- Coding script: different types, purpose and conventions

- Digital design documentation: different types and purposes and conventions

Problem solving

- Frameworks, techniques, processes and strategies used to solve problems

Communication

- Principles of effective communication: conventions of different types of written communication and suitability for different purposes and audiences

- Spelling, punctuation and grammar (SPAG): punctuation markers, grammatical conventions and spelling of key technical and non-technical terminology

- Vocabulary: technical and non-technical and use to achieve particular effects and for different purposes

- Engaging with an audience: obtaining and clarifying information

Digital

- Software: feature, functions, applications for project planning and coding

Skills

Programming skills

- Write code for discrete software components following a logical approach

Planning

- Identify discrete steps required to achieve an outcome

- Estimate time and resources required to achieve an outcome

- Prioritise activities required to achieve an outcome

- Sequence activities required to achieve an outcome

- Coordinate activities required to achieve an outcome

Critical thinking

- Effective questioning to elicit information

- Evaluating pros and cons of information provided

- Apply logic and reasoned argument to information presented

Self-managing

- Monitor own performance/progress against objectives

- Reflect on feedback on own performance

- Manage own time in achieving objectives

Self-reflecting

- Identify success criteria for a task

- Consider process and evidence available for review

- Making judgements based on evidence available

Communicating

- Apply technical language in relevant contexts

- Create documents appropriate to purpose and audience

- Produce clear, coherent texts

- Interpret information and data presented in different formats

- Apply appropriate vocabulary, grammar, form, structural and organisational features to reflect audience, purpose and context

Digital skills

- Apply software to produce project planning materials

- Apply software to produce code

Supplementary information to support teaching and learning

Illustrative examples: Develop breadth through:

Contexts

- Individual
- Organisation: type and size and range

Programming

- Programming languages: JavaScript, HTML and CSS, C# and Python
- Requirements definition and design thinking: functional and non-functional requirements such as use cases, storyboards, user stories and performance and accessibility

Tools

- Hardware: CPU, memory, input and output
- devices, storage; on physical devices: magnetic, optical, solid state and contemporary secondary storage (cloud, network attached storage (NAS))
- Software: utility software, compression, defragmentation and backing up

Sustainability

- Sustainable techniques: reuse and repurposing of existing code
- Technological developments: artificial intelligence and automation

Project management

- Methodology: agile (self-organising and cross functional teams) and waterfall (designated roles)

Problem solving

- Problem types: network and infrastructure, software and application, website and social media
- Problem frameworks: structured (gather information, problem identification, potential cause, possible solutions, present solutions, assess options, implement preferred solutions, problem closure)

Digital

- Software: applications for collaboration such as discussion threads and document collaboration

Illustrative examples: Develop depth for stretch and challenge through:

- Skills of critical thinking and decision making
- Principles of problem analysis
- Code structure including singular purpose
- Code organisation techniques, such as classes, methods, sub-routines, re-factoring, open source and functions

Behaviours:

- Resilient
- Takes initiative
- Enthusiastic

Mapping of opportunities to support students' development of English, maths and digital skills:

English
- GCSE: Critical reading and comprehension
    - Interpret information and data presented in different formats
- GCSE: Writing

    - Apply technical language in relevant contexts
    - Create documents appropriate to purpose and audience
    - Produce clear, coherent texts
    - Interpret information and data presented in different formats
    - Apply appropriate vocabulary, grammar, form, structural and organisational features to reflect audience, purpose and context
    -
- Functional skills: Reading
    - Interpret information and data presented in different formats
- Functional skills: Writing
    - Apply technical language in relevant contexts
    - Create documents appropriate to purpose and audience
    - Produce clear, coherent texts
    - Interpret information and data presented in different formats
    - Apply appropriate vocabulary, grammar, form, structural and organisational features to reflect audience, purpose and context

Digital
- Functional skills: Creating and editing
    - Apply software to produce project planning materials
    - Apply software to produce code

Annex: Glossary

Term	Description
Behaviours	The behaviours included are enabling attributes and attitudes identified by employers as important to industry and to achieving the outcomes. They are taken from the list developed for T Levels, available from the [Operating Instructions for the Creation of Outline Content](Annex E). Most of the behaviours have been included as supplementary information for providers in designing teaching and learning. Those that can be assessed in context have been incorporated into the skills to be assessed. These are: "self-reflecting" and "self-managing".
Content	The national technical outcomes set out at a high level, the minimum content needed to demonstrate the outcomes for the specified route. The content includes the outcomes, all knowledge and skills topic area headings and the underpinning bullets.
English, maths and digital	There are English (communication), maths (numeracy) and digital topic areas in the knowledge and skills where they are required to achieve the outcome and must be covered in the qualification. Supplementary information provides mapping and references to relevant English, maths and digital qualification subject content. This is to support naturally occurring opportunities for these skills to be developed and applied in context, to help consolidate students' learning and understand their relevance and value to industry. The mapping references relate to qualification subject content from: • [GCSE English language](#) • [GCSE mathematics](#) • [Functional Skills English](#) • [Functional Skills mathematics](#) • [Functional Skills Qualifications - digital subject content](#)
Holistic delivery	Holistic delivery involves integrated learning so that students make connections between skills, knowledge and understanding from across the programme.
Illustrative examples of breadth and depth	Illustrative examples of how breadth and depth could be introduced into teaching and learning. Developing breadth – supports the consolidation of knowledge and skills at the same level, by applying concepts, facts and theories to different contexts. Developing depth – provides stretch and challenge to move students towards the next level, by analysing information and ideas from across the contexts, to draw conclusions and make judgements.

Term	Description
Knowledge and understanding	The knowledge content included in each outcome includes both knowledge and understanding, which relate to the theoretical facts, principles, concepts, procedures and techniques that students should acquire.
Outcomes	The national technical outcomes describe what the student should be able to do by the end of the programme. They encompass: • the activities that students will undertake to demonstrate their learning • the content (knowledge and skills) being taught and learnt • the knowledge, skills and behaviours being developed in students. Most outcomes include both knowledge and skills. The Agriculture, environmental and animal care and Health and science routes include an outcome with knowledge only.
Rationale	This is the reasoning for the content. There is an introductory rationale for each set of national technical outcomes and a rationale for each outcome.
Route	The Sainsbury Review set out 15 routes structuring occupations across the labour market that require technical education. There are T Levels for 12 Technical Education routes.
Route-based approach	There is one set of national technical outcomes for each of the 12 T Level routes, rather than each T Level or occupational specialism. This is to enable progression to any T Level within the route.
Route-based project	T Level Foundation Year students are expected to complete a small project relevant to their route. A resource is available to help education providers design and deliver effective route-based projects.
Skills	There are different types of skills included in the national technical outcomes: • Technical skills – which are occupation-specific, mostly practical skills. These may vary widely between industry, sector, occupation and job type. • Employability or transferable skills – which correspond to those developed for T Levels, examples of which are available from the Operating Instructions for the Creation of Outline Content Annex E. Also included are English, maths and digital skills which appear under Communication, Numeracy and Digital headings.
Topic areas	The topic areas are the headings which set out, at a high level, the underpinning key knowledge and skills areas required to demonstrate the outcome.

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