

- **Outcome 1 (O1). Explore data analysis solutions (mapped to NCFE Level 2 Certificate in Data Analysis - CODE DA)**
- **Outcome 2 (O2). Design a cyber security resilience plan (mapped to NCFE Level 2 Certificate in the Principles of Cyber Security - CODE CS)**
- **Outcome 3 (O3). Produce digital solutions (mapped to NCFE Level 2 Certificate in Understanding Coding – CODE UC)**

Outcome 1:	
Explore data analysis solutions	
Rationale:	
<p>The outcome gives an opportunity to understand sources and types of data and to apply data analysis. This can be extended to cover a variety of contexts by providers where they feel it would best support students’ progress to T Levels. It allows for the development of key technical knowledge in relation to data analysis solutions and providers can specify the context.</p>	
Knowledge:	Skills:
<p>Types of data and the differences between them</p> <ul style="list-style-type: none"> • Structured, for example, names, dates, addresses, stock information, geolocation (DA Unit 1 1.1, 1.2, 1.3) (DA Unit 3 1.3) • Unstructured, for example, rich media, email, chats, sensor data (DA Unit 1 1.1, 1.2, 1.3) (DA Unit 3 1.3) • Advantages and disadvantages of different data types including physical and electronic (DA Unit1 1.1) (DA Unit 3 1.3) <p>Sources of data</p> <ul style="list-style-type: none"> • Internal sources (DA Unit 3 1.1) • External sources (DA Unit 3 1.2) • Reliability (DA Unit 3 1.3) <ul style="list-style-type: none"> • Social media • Academic • Data validation (DA Unit 3 1.5) <p>Purpose of data and collection methods</p> <ul style="list-style-type: none"> • Purpose of data collection including its role in answering questions, making 	<p>Identify different sources of data (DA Unit 3 1.1 and 1.2 practical activities to support the theory and practice)</p> <p>Select data from different sources including:</p> <ul style="list-style-type: none"> • Structured data, for example, spreadsheets and databases • Unstructured data, for example, social media posts, web, documents, imagery, audio visual <p>(DA Unit 3 LO1 practical activities to support the theory and practice) (DA Unit 4 complete unit focuses on working with a range of data)</p> <p>Identify different types of data, including:</p> <ul style="list-style-type: none"> • That which can be calculated and computed • That which can be organised into categories

<p>decisions and making predictions about future probabilities and trends (DA Unit 3 2.1)</p> <ul style="list-style-type: none"> • The difference between qualitative and quantitative collection methods and how they are used: (DA Unit 1 2.5, 2.6) (DA Unit 3 2.2) <ul style="list-style-type: none"> ○ Quantitative data including quantities, amounts and numerical groups which can be easily calculated and statistically analysed (DA Unit 1 2.5) ○ Qualitative data including descriptions, characteristics and feelings, which are analysed for patterns, sequences and opinions (DA Unit 1 2.6) • Qualitative (DA Unit 1 2.5) (DA Unit 3 2.1, 2.2) <ul style="list-style-type: none"> • Interviews/focus groups • Questionnaires/surveys • Observations • Documents and records • Quantitative (DA Unit 1 2.6) (DA Unit 3 2.1, 2.2) <ul style="list-style-type: none"> • Counts • Measurements <p>Data manipulation</p> <ul style="list-style-type: none"> • Data cleansing (DA Unit 1 2.1)(DA Unit 3 3.3) • Data blending techniques (DA Unit 1 1.4, 2.1)(DA Unit 3 3.1, 3.2) • How to merge data (DA Unit 1 1.4) (DA Unit 3 3.1, 3.2, 3.3) • Statistics including: (DA Unit 1 2.3, 2.4) (DA Unit 5 2.1, 2.2, 2.3, 2.4) <p>The construction of tables, charts and diagrams (including frequency), and how to interpret them and know their appropriate use</p> <ul style="list-style-type: none"> ○ How to interpret, analyse and compare the distributions of data sets ○ How to recognise correlation and make predictions 	<p>(DA Unit 3 LO1 practical activities to support the theory and practice) (DA Unit 4 complete unit focuses on working with a range of data)</p> <p>Apply qualitative and quantitative methods for collecting data, for example:</p> <ul style="list-style-type: none"> • Qualitative (through observation) • Quantitative (using a rating scale / measure) <p>(DA Unit 3 LO2 practical activities to support the theory and practice)</p> <p>Perform a data investigation including manipulating and presenting data in a required format:</p> <ul style="list-style-type: none"> • Plan, collect, organise and validate data • Explore and analyse data • Interpret and present information <p>(DA Unit 4 complete unit focuses on working with a range of data)</p> <p>Manipulate data into a required format</p> <p>Present (DA Unit 5)</p> <ul style="list-style-type: none"> • Convey information <p>Observe (DA Unit 3)</p> <ul style="list-style-type: none"> • Situational • Monitor <p>Record (DA Unit 3 formative/summative assessment)</p> <ul style="list-style-type: none"> • Transcribe • Note • Capture • Save <p>Analyse (DA Units 1, 3, 4, 5 formative/summative assessment)</p> <ul style="list-style-type: none"> • Identify common features • Deconstruct • Classify
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<ul style="list-style-type: none"> ○ How to interpolate and extrapolate (DA Units 4 and 5) • Data Protection and Security (DA Unit 2 2.3, 2.4, 2.5, 2.6, 2.7) <p>Formats</p> <ul style="list-style-type: none"> • Those formats requiring future accessibility, for example, non-proprietary, open, with documented standards (Not directly mentioned but should get covered as part of DA Unit 1 1.1, 2.1, 2.2 and DA Unit 4 LO3) • Appropriate formats, for example, image, text, audio, database (DA Unit 1 1.1, 1.2, 1.3, 1.4, 2.1) • Visualisation (and tools), for example, charts and tables (DA Unit 4 3.1, 3.2, 3.3, 3.4, 3.5, 3.6) (DA Unit 5 2.1, 2.2, 2.3, 2.4) <p>Emerging technology trends and impact</p> <ul style="list-style-type: none"> • Innovation in digital technologies, for example, Artificial Intelligence (AI), Augmented Reality (AR), Gaming innovations (for example, high fidelity graphics and the metaverse) (Not directly covered in any unit although AI could be explored within the DA unit 1 2.3 and 2.4 and AR could be discussed in relation to visualisation in unit 5 LO2, could also be considered as part of the role of data analyst in unit 2 LO1 in relation to the role evolving) • Environmental impact of digital technologies: health, energy use and resources (Although not directly mentioned in units this can be discussed as part of the big data in unit 1 1.4) • Ethical impact of gathering and using data: privacy, inclusion and professionalism (DA Unit 1 2.7) (DA Unit 2 2.7)(DA Unit 3 2.3) 	<ul style="list-style-type: none"> • Order <p>Evaluate (DA Units 1, 3, 4, 5 formative/summative assessment)</p> <ul style="list-style-type: none"> • Consider and appraise process and evidence • Make recommendations <p>Solve problems (DA Units 3, 4, 5 formative/summative assessment)</p> <ul style="list-style-type: none"> • Apply a logical approach to identifying issues and propose solutions <p>Communication (Throughout formative and summative assessments and DA Unit 5)</p> <ul style="list-style-type: none"> • Read and comprehend (English – GCSE Critical reading and comprehension; Functional Skills Reading) • Summarise and synthesise (English – GCSE Critical reading and comprehension; Functional Skills Reading) • Produce clear and coherent texts (English – GCSE Writing; Functional Skills Writing (spelling, punctuation and grammar), Writing (writing composition)) <p>Numeracy (Throughout formative and summative assessments and DA Unit 3 3 and 4)</p> <ul style="list-style-type: none"> • Interpret graphs in real contexts (maths – GCSE Algebra; Functional Skills Handling information and data) • Interpret and construct tables, charts and diagrams (maths – GCSE Statistics; Functional Skills Using common measures, shape and space) <p>Digital (Throughout all units across all programmes)</p> <ul style="list-style-type: none"> • Use devices and handling information (EDS level 1 (skills statement 2 and 3))
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	<ul style="list-style-type: none"> • Create and edit (EDS level 1 (skills statement 6,7 and 8)) • Communicate online (EDS level 1 (skills statement 9)) <ul style="list-style-type: none"> • Be responsible, safe and legal online (EDS level 1 (skills statement 13))
Behaviours:	
<ul style="list-style-type: none"> • Reflective • Attention to detail • Focussed <p>(Throughout formative learning, presentations, research, and practical placement opportunities.)</p>	

Outcome 2:	
Design a cyber security resilience plan	
Rationale:	
<p>Rationale: The outcome allows for the introduction of critical fundamental knowledge related to security. It will allow students to gain an understanding of the need for cyber security. This outcome also provides a purposeful context for the introduction of fundamental technical knowledge relating to different types of threats, vulnerabilities, risks and protection measures. Students will be able to develop key technical skills in planning and assessing cyber security risk.</p>	
Knowledge:	Skills:
<p>Planning</p> <ul style="list-style-type: none"> o Formats, for example, written, diagram and illustration (CS Unit 2 1.3, 1.4) (CS Unit 5 1.1) o Stages o Identify o Protect o Detect o Respond o Recover 	<p>Plan</p> <p>(CS Unit 2 3.1-3.6 assessment guidance) (CS Unit 5 2.3 assessment guidance)</p> <ul style="list-style-type: none"> • Identify discrete steps • Estimate time and resources • Prioritise • Coordinate • Sequence activity • Options

<p>The need for cyber security (CS Unit 1 1.3, 1.4, 3.4) (CS Unit 2 1.3, 1.4) (CS Unit 4 1.1, 3.1, 3.4, 3.5)</p> <ul style="list-style-type: none"> ○ Motivations for cyber attacks (CS Unit 1 1.2, 1.5) ○ The types of threat actors and motivations, for example: (CS Unit 1 1.3, 1.4, 3.4) (CS Unit 2 1.3, 1.4) (CS Unit 4 1.1, 3.1, 3.4, 3.5) <ul style="list-style-type: none"> ○ Nation States / Geopolitical ○ Cyber Criminals ○ Profit ○ Hacktivists ○ Ideological ○ Terrorist Groups ○ Ideological and/or violence ○ Thrill Seekers ○ Satisfaction ○ Insider Threats ○ Discontent ○ Impact on an individual and an organisation (CS Unit 1 2.1, 2.2, 2.3) (CS Unit 2 2.1) <p>Data protection</p> <ul style="list-style-type: none"> ○ Protection of personal data, the legal framework of the current Data Protection legislation, for example, GDPR Act 2018 and the rights of the individual (CS Unit 3 1.1) ○ The importance of adhering to legislation (CS Unit 3 2.1, 2.2, 2.3, 2.4, 2.5) ○ The purpose of the Information Commissioner’s Office (ICO) <p>(Data protection is also covered in unit 2 of the data analysis qualification in addition to unit 3 of the cyber qualification which covers legal and ethical aspects and provides opportunity to also capture all of this section-Note ICO not directly mentioned in NCFE specification)</p>	<p>Follow Data protection guidelines (CS Unit 3 could be included as part of the formative and summative assessment. Additionally, could be covered also as part of the data analytics qualification assessment unit 2)</p> <p>Identify protection measures that will counter given threats (CS Unit 4 could be included as part of the formative and summative assessment)</p> <p>Assess cyber security risk</p> <ul style="list-style-type: none"> • Investigate • Analyse • Mitigate <p>(CS Unit 4 could be included as part of the formative and summative assessment)</p> <p>Communication (Unit 6 focuses on working within a team, and written and verbal communication. Additionally, all other units use a combination of formative and summative assessment methods)</p> <ul style="list-style-type: none"> • Read and comprehend (English – GCSE Critical reading and comprehension; Functional Skills Reading) • Summarise and synthesise (English – GCSE Critical reading and comprehension; Functional Skills Reading) <p>Produce clear and coherent texts (English – GCSE Writing; Functional Skills Writing (spelling, punctuation and grammar), Writing (writing composition))</p> <p>Digital (Throughout all units across all programmes)</p>
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<p>Threats, vulnerabilities and risk</p> <ul style="list-style-type: none"> ○ The difference between threats, vulnerabilities and risk: threats are potential attacks that an organisation will defend itself against; vulnerabilities are gaps and weaknesses in an organisation's security; risk is the assessment of potential threats to security and vulnerabilities within an organisation's network and information systems ○ Types of threats including: <ul style="list-style-type: none"> ○ Social engineering, for example, phishing, spear phishing, vishing, smishing, shoulder surfing, dumpster diving ○ Denial of Service (DoS) / Distributed Denial of Service (DDoS) ○ Malware, for example, virus, adware, ransomware, trojan, botnet, spyware ○ Password attack, for example, brute force, dictionary attack ○ Man in the Middle <p>(CS Unit 1 1.4, 1.5) (CS Unit 2 3.1, 3.2, 3.5, 3.6) (CS Unit 4 1.1, 3.3, 3.4, 3.5) (CS Unit 5 3.4)</p> <ul style="list-style-type: none"> ○ Vulnerabilities, including: ○ Human, for example, untrained / using their fears / clickbaits ○ Physical, for example, open locks, no guards ○ Zero-day ○ Weak system configurations, for example, using default password on WiFi router ○ Lack of patch management, for example, updates ○ Legacy platforms <p>(CS Unit 1 2.1, 2.2) (CS Unit 4 3.1, 3.3)</p> <ul style="list-style-type: none"> ○ Risks ○ Identification ○ Threat assessment ○ Mitigations and risk reduction approaches 	<ul style="list-style-type: none"> • Use devices and handling information (EDS level 1 (skills statement 1,3 and 4)) • Communicate online (EDS level 1 (skills statement 10)) • Be responsible, safe and legal online (EDS level 1 (skills statement 13,14,15,16))
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<ul style="list-style-type: none"> ○ Evaluating suitable approaches ○ Implementing risk reduction approaches <p>(CS Unit 2 1.3) (CS Unit 3 2.5,3.1, 3.2) (CS Unit 4 1.1, 3.5)</p> <p>Protection measures for</p> <ul style="list-style-type: none"> • Hardware and software, for example, firewalls and anti-malware software • Users, for example, education • Administration, for example, updating software • Physical security, for example, security cameras, keypad locks <p>(CS Unit 2 1.1, 1.3, 1.4) (CS Unit 3 2.1, 2.2, 2.5) (CS Unit 4 1.1, 2.3, 3.5) (CS Unit 5 1.6, 2.2, 3.4)</p>	
Behaviours:	
<ul style="list-style-type: none"> • Independent • Responsible • Attention to detail <p>(Throughout formative learning, presentations, research, and practical placement opportunities.)</p>	

Outcome 3:	
Produce digital solutions	
Rationale:	
<p>The outcome allows for the introduction of programming principles. It gives students the opportunity to apply problem-solving skills to analyse problems and to identify solutions that can be developed in a range of digital scenarios, for example, user support or programming. There is also an opportunity for students to learn about communication methods and in particular different ways of working which can be specific to the digital environment.</p> <p>The main focus of the outcome is the recognition of typical problems in digital and the ability to use a problem-solving framework.</p>	
Knowledge:	Skills:
Programming principles	<p>Critical thinking (UC all Units include explaining, comparing, defining, describing)</p> <ul style="list-style-type: none"> • Question

<ul style="list-style-type: none"> Algorithms including what they are used for and how they work; the ability to interpret, amend and create algorithms (UC Unit 1 1.5 – LO1 Explores coding and syntax but algorithms would be expected as part of this) The requirements for writing program code (UC Unit 1 1.1, 1.2, 1.3) How to develop program code and constructs, coding logic, data types, structures, input/output, operators and subprograms (UC Unit 2 LO3) High-level and low-level programming languages and understand their suitability for a particular task (UC Unit 1 1.3, 1.4, 1.6) (UC Unit 3 LO1, LO2, LO3) Requirements definition and design thinking (Not directly covered but can be incorporated into the SDL at planning stage UC Unit 1 LO3) Agile principles (UC Unit 5 LO4) Backup and recovery (UC Unit 1 3.6, 3.7 would be included as part of the maintenance stage) <p>Types of problems</p> <ul style="list-style-type: none"> Internet connection Device failure Forgotten password File deletion Software installation Software bug Skills gaps When to escalate <p>(Problems identified through UC Unit 1 LO2 skills and roles, 3.5 and 3.7 testing and maintenance stages, Unit 2 LO1 basic computer terminology, Unit 4 LO1 best coding practice and LO2 testing methods)</p>	<ul style="list-style-type: none"> Evaluate pros and cons Use logic and reasoned argument Synthesise and conclude <p>Analyse (Across all units identifying key characteristics, identifying principles, explain roles, describing different methods, exploring methods of testing, comparing differences of stages in DevOps)</p> <ul style="list-style-type: none"> Identify common features Deconstruct Classify Order <p>Record (All units will use formative and summative assessment methods such as reports, research, statements, annotation, questions and answers and presentations)</p> <ul style="list-style-type: none"> Transcribe Note Capture Save <p>Evaluate (All units will use formative and summative assessment methods that will evaluate processes and methods explored)</p> <ul style="list-style-type: none"> Consider and appraise process and evidence Make recommendations <p>Lead (UC Unit 5 explores various communication techniques in relation to software development and project management principles)</p> <ul style="list-style-type: none"> Inspire others Set direction Take responsibility Model appropriate behaviours
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<p>Hardware</p> <ul style="list-style-type: none"> The function of hardware components of a computer system (CPU, memory, storage, input and output devices) and how they work together (UC Unit 2 LO1) Storage of data on physical devices (magnetic, optical, solid state) and contemporary secondary storage, for example, cloud, network attached storage (NAS) (UC Unit 2 1.5) (different storage devices will also be explored through the data analytics qualification Unit 3 3.4) <p>Software</p> <ul style="list-style-type: none"> The function of an operating system and how it manages files, processes, hardware and the user interface (Not explicitly covered but could be assessed within UC Unit 5 as part of project planning and understanding user requirements) The purpose and functions of utility software, for example, compression, defragmentation, backing up (Not explicitly covered but could be assessed within UC Unit 1 LO3 as part of the development cycle by exploring utility tools that can be used throughout the stages, or utility software could be explored in CS Unit 5 when exploring preventative methods) <p>Problem solving frameworks</p> <ul style="list-style-type: none"> Different approaches to solving problems including the difference 	<p>Communication (UC Unit 5 LO1 and LO2)</p> <ul style="list-style-type: none"> Actively listen Engage an audience Build rapport Adapt style and tone Share Produce clear and coherent texts (English – GCSE Writing; Functional Skills Writing (spelling, punctuation and grammar), Writing (writing composition)) Present information and ideas (English – GCSE Spoken language; Functional Skills Speaking, listening and communicating) Take part in conversations (English – GCSE Spoken language; Functional Skills Speaking, listening and communicating) <p>Digital (Throughout all units across all programmes)</p> <ul style="list-style-type: none"> Use devices and handle information (EDS level 1 (skills statement 2,4 and 5)) Create and edit (EDS level 1 (skills statement 8))
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<p>between problem solving and trouble shooting</p> <ul style="list-style-type: none"> • The importance of using a structured approach, for example: <ul style="list-style-type: none"> ○ Gather information about the probable cause of a problem ○ Problem identification ○ Potential cause ○ Generate possible solutions ○ Present solutions ○ Assess options ○ Implement preferred solutions ○ Problem closure <p>(Not explicitly covered although troubleshooting techniques can be included across all three qualifications. Problem solving coding in UC Unit 4 LO2 testing and debugging, CS Unit 5 LO1 preventative measure to maintain cyber security, DA Unit 3 LO3 preparing and cleansing data while checking for errors.)</p> <p>Communication</p> <ul style="list-style-type: none"> • Communication methods, formats and techniques, including: <ul style="list-style-type: none"> ○ Written, verbal, non-verbal ○ Presentation, email, conversation, incident ticket, status updates ○ Audience ○ Active listening and dealing with complaints <p>(UC Unit 5 LO1 and LO2)</p> • Project management methodology, for example, agile (self-organising and cross functional teams), waterfall (designated roles) (UC Unit 5 LO3) 	
<p>Behaviours:</p>	
<ul style="list-style-type: none"> • Resilient • Self-aware 	

- Socially adept
- Empathetic
- Respectful

(Throughout formative learning, presentations, research, and practical placement opportunities.)