

Curriculum Knowledge Map

CHS Computing and Technology 2023/2024

PEARSON BTEC Tech Award Level1/Level2 in Digital Information Technology

Component 1: Exploring User Interface Design Principles and Project Planning Techniques	Component 2: Collecting, Presenting and Interpreting Data	Component 3: Effective Digital Working Practices
<p>Learners will develop their understanding of what makes an effective user interface and how to effectively manage a project. They will use this understanding to plan, design and create a user interface.</p> <p>Learning outcomes</p> <ul style="list-style-type: none"> ✓ Understand interface design for individuals and organisations. ✓ Be able to use project planning techniques to plan, design and develop a user interface. ✓ Be able to review a user interface. 	<p>Learners will understand the characteristics of data and information and how they help organisations in decision making. They will use data manipulation methods to create a dashboard to present and draw conclusions from information.</p> <p>Learning outcomes</p> <ul style="list-style-type: none"> ✓ Understand how data is collected and used by organisations and its impact on individuals. ✓ Be able to create a dashboard using data manipulation tools. ✓ Be able draw conclusions and review data presentation methods. 	<p>Learners will explore how organisations use digital systems and the wider implications associated with their use.</p> <p>Learning Aims:</p> <ul style="list-style-type: none"> A. Modern Technologies B. Cyber Security C. The Wider Implications of Digital Systems D. Planning & Communication in Digital Systems
<p>Components 1 and 2 are assessed through non-exam internal assessment. The non-exam internal assessment for these components has been designed to demonstrate application of the conceptual knowledge underpinning the sector through realistic tasks and activities. This style of assessment promotes deep learning through ensuring the connection between knowledge and practice.</p> <ul style="list-style-type: none"> • Non-exam internal assessment set by • Pearson, marked by the centre and • moderated by Pearson. • The Pearson-set Assignment will be • completed in approximately 6 hours of • supervised assessment. • 60 marks. • 		<p>External assessment set and marked by Pearson, completed under supervised conditions.</p> <p>The assessment will be completed in 1 hour. 30 minutes within the period timetabled by Pearson. 60 marks.</p>

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PEARSON BTEC Tech Award ½ in Digital Information Technology

Year 10	AUTUMN		SPRING		SUMMER	
	Component 1	Component 1	C1 Coursework	C3 Theory	C3 Theory	C2 Theory
	Learning outcome A: Understand interface design for individuals and organisations	Learning outcome B: Be able to use project planning techniques to plan, design and develop a user interface	During this half term students will undertake coursework (NEA) activities that contribute to 30% of their final grade.	Learners will explore how organisations use digital systems and the wider implications associated with their use.	Implications of Digital Systems & Planning and communication	Learning outcome A: Understand how data is collected by organisations and its impact on individuals
Declarative <i>What should they know?</i> <i>'to know that' the facts, concepts, rules. It just sits there and waits to be of service</i>	A1 User interfaces Learners will understand the use of different types of user interface and how they vary across different uses, devices, and purposes. <ul style="list-style-type: none"> Types of user interface Range of uses and devices. Factors affecting the choice of user interface. Hardware and software influences A2 Audience Needs Understand the varying needs of the audience and how they affect both the type and the design of the interface. <ul style="list-style-type: none"> Accessibility needs Skill Level Demographics A3 Design principles How design principles provide both appropriate and effective user interaction with hardware devices <ul style="list-style-type: none"> Colours Font style/size Language Amount of information Layout User perception 	B1 Project Planning Techniques Understand the use of different planning tools and design methodologies that can be used to plan, monitor, and execute projects. <u>Planning Tools</u> <ul style="list-style-type: none"> Task list Written/ Graphical descriptions. Gantt Charts Mood boards Mind maps <u>Methodologies</u> <ul style="list-style-type: none"> Waterfall Agile Scrum B2 Creating a project proposal and plan. Understand project planning techniques used to develop a project proposal and project plan for the development of a user interface for a given brief. <u>Project Proposal</u> <ul style="list-style-type: none"> Purpose and audience Project requirements <ul style="list-style-type: none"> User Output/Input Accessibility Requirements Constraints 	Autumn term allowed students to develop their knowledge and understanding of what makes an effective user interface and how to effectively manage a project. They will now use this understanding to plan, design and create a user interface. <i>Non-exam internal assessment set by Pearson, marked by the centre and moderated by Pearson. The Pearson-set Assignment will be completed in approximately 6 hours of supervised assessment. 60 marks.</i>	A1 Modern technologies Understand how and why modern technologies are used by organisations and stakeholders alongside the implications of these tools and technologies. <ul style="list-style-type: none"> Communication technologies: Features and uses of cloud storage: Features and uses of cloud computing: How the selection of platforms and services impacts on the use of cloud technologies: How cloud and 'traditional' systems are used together: Implications for organisations when choosing cloud technologies: A2 Impact of modern technologies Learners should understand how modern technologies impact on the way organisations perform tasks.	C Wider implications of digital systems C1 Responsible Use <ul style="list-style-type: none"> Shared data (location based, transactional, cookies, data exchanged between services) Environmental C2 Legal and ethical <ul style="list-style-type: none"> Importance of providing equal access to services and information Net neutrality and how it impacts organisations. The purpose and use of acceptable use policies Blurring of social and business boundaries Data protection principles Data and the use of the internet Dealing with intellectual property The criminal use of computer systems D Planning & Communication in digital systems	A1 Characteristics of Data and Information Learners will understand the concepts of data and that data is meaningless without converting it into information by adding structure and context. <ul style="list-style-type: none"> Characteristics of Data Characteristics of Information A2 Representing Information Learners will understand the different ways of representing information and will be able to explain situations where they would be used. <ul style="list-style-type: none"> Text Numbers Tables Graphs/Charts Sparklines Infographics A3 Ensuring data is suitable for processing. Learners will understand the methods that can be used to ensure data input is suitable and within boundaries so that it is ready to be processed. <ul style="list-style-type: none"> Validation Methods <ul style="list-style-type: none"> Range Type

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	<ul style="list-style-type: none"> Retaining User attention Intuitive design <p>A4 Designing an efficient user interface.</p> <p>Understand the techniques that can be used to improve both the speed and access to user interfaces.</p> <ul style="list-style-type: none"> Keyboard shortcuts Informative feedback Reversal of actions Distinguishable links/buttons Objects to influence selection/ stand out/ placement. 	<ul style="list-style-type: none"> Time Resources Dependencies Security <p>Project Plan:</p> <p>Timescales:</p> <ul style="list-style-type: none"> Overall Sub-tasks Key Milestones 		<ul style="list-style-type: none"> Changes to modern teams facilitated by modern technologies: How modern technologies can be used to manage modern teams: How organisations use modern technologies to communicate with stakeholders: How modern technologies aid inclusivity and accessibility: Positive and negative impacts of modern technologies Positive and negative impacts of modern technologies on individuals: <p>B Cyber security</p> <p>B1 Threats to Data</p> <ul style="list-style-type: none"> Why systems are attacked. External threats to digital systems and data security Internal threats to digital systems & data security Impacts of security breaches <p>B2 Prevention and management of threats to data</p> <ul style="list-style-type: none"> User access restriction Data level protection Finding weaknesses and improving system security <p>B3 Policy</p> <ul style="list-style-type: none"> Defining responsibilities Defining security parameters Disaster recovery policy Actions to take after an attack 	<p>D1 Forms of Notation</p> <ul style="list-style-type: none"> Understanding how organisations use different forms of notation to explain systems, data and information: <ul style="list-style-type: none"> Data flow diagrams Flowcharts System diagrams Tables Written information Be able to interpret information presented using different forms of notation in a range of contexts. Be able to present knowledge and understanding using different forms of notations. 	<ul style="list-style-type: none"> Presence Length <ul style="list-style-type: none"> Verification Methods <ul style="list-style-type: none"> Proofreading Double entry <p>A4 Data Collection</p> <p>Learners will understand the factors that affect the quality of information.</p> <ul style="list-style-type: none"> Quality of information factors: <ul style="list-style-type: none"> source/collection method accuracy age completeness amount of detail format/presentation volume. <p>A5 Quality of Information</p> <p>A6 Sectors that use Data modelling.</p> <p>Learners will understand how different types of data are used by organisations for data modelling.</p> <ul style="list-style-type: none"> Types of sectors, to include: <ul style="list-style-type: none"> transport education retail banking entertainment <p>A7 Threats to individuals</p> <p>Learners will understand the different threats that face individuals who have data stored about them.</p> <ul style="list-style-type: none"> Threats to individuals, to include: <ul style="list-style-type: none"> invasion of privacy fraud targeting vulnerable groups of people inaccurate data could be stored.
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<p>Procedural <i>What should they be able to do? 'to know how to' produces action, how to perform the steps in a process</i></p>	<ul style="list-style-type: none"> Learners will understand the use of different types of user interface and how they vary across different uses, devices, and purposes. Understand the varying needs of the audience and how they affect both the type and the design of the interface. Understand how design principles provide both appropriate and effective user interaction with hardware devices. Understand the techniques that can be used to improve both the speed and access to user interfaces. 	<p>B3 Creating an initial design Learners will understand how to produce an initial design using design principles. <u>Producing a design that meets:</u> the user requirements, including input and output requirements. <u>Producing a design specification that includes:</u> o visualisation, to include storyboards, sketches o hardware requirements o software requirements. <u>Producing a design that allows for:</u> o increased user confidence/familiarity o reduced learning time of new interfaces/features o reduced time to complete tasks o increased user attention o reduced need for specialised knowledge. B4 Developing a user interface. Learners will understand how to use their design to produce a user interface. • Initial design using the design principles listed in A3 Design principles.</p>	<p>Task 1: Project Proposal</p> <ul style="list-style-type: none"> Complete a project proposal template through analysis of a project brief. Consider the purpose and audience of a project brief, as well as project requirements, user accessibility needs and constraints. Use software to create a project plan using project planning and design methodologies taking into consideration project proposal brief and overall timescales for the project. <p>Task 2: Interface Designs</p> <ul style="list-style-type: none"> Design an initial user interface for four screens of a user interface that meets user requirements and user accessibility needs and other specific hardware and software needs and design considerations. <p>Task 3: Prototype User Interface</p> <ul style="list-style-type: none"> Use initial designs to develop a working prototype of four screens that meets requirements and user accessibility needs. <p>Task 4: Review</p> <ul style="list-style-type: none"> Review their user interface and project planning techniques against a set of criteria: <ul style="list-style-type: none"> User requirements Ease of use 	<p>Students should be able to:</p> <ul style="list-style-type: none"> Analyse information in a range of vocational contexts so that students develop a greater understanding of the use of digital systems by organisations and so that they can make reasoned judgements on the systems. Demonstrate knowledge of facts, terms, processes and issues in relation to digital information technology Demonstrate an understanding of facts, terms, processes and issues in relation to digital information technology. Apply an understanding of facts, terms, processes and issues in relation to digital information technology. Make connections with the concepts, issues, terms and processes in digital information technology. Be able to interpret information presented using different forms of notation in a range of contexts. Be able to present knowledge and understanding using different forms of notations. 	<ul style="list-style-type: none"> Learners will understand the concepts of data and that data is meaningless without converting it into information by adding structure and context. Learners will understand the different ways of representing information and will be able to explain situations where they would be used. Learners will understand the methods that can be used to ensure data input is suitable. and within boundaries so that it is ready to be processed. Learners will understand the factors that affect the quality of information. Learners will understand how different types of data are used by organisations for data modelling. Learners will understand the different threats that face individuals who have data stored about them.
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Disciplinary Literacy <i>(Tier 3 Vocab)</i>	Tier 3 Disciplinary literacy linked to the unit of study: <ul style="list-style-type: none"> • User Interface • GUI • WIMP • Sensors • Device • Embedded Systems • Performance/Response Time • User Requirements • User Experience • User Accessibility • Operating Systems • Platforms • Memory • Processing • Emerging Technologies • Innovative • Motor • Cognitive • Skill Levels • Demographics • House Style • Serif / Sans Serif • White Space • Layout • Consistency • Breadcrumbs • Icons • Input • Output • Perception • Intuitive 	Tier 3 Disciplinary literacy linked to the unit of study: <ul style="list-style-type: none"> • Gantt Chart • Mood Board • Mind map • Methodology • Waterfall • Agile • Scrum • Project Brief • Project Requirements • User Requirements • Input/Output Requirements • Accessibility Requirements • Constraints • Timescales • Sub-tasks • Milestones • Storyboard • 	Tier 3 Disciplinary literacy linked to the unit of study: <ul style="list-style-type: none"> • Success Criteria • Limited • Adequate • Good • Comprehensive • Superficial • Partially • Mostly • Fully • Assignment Brief • Application 	Tier 3 Disciplinary literacy linked to the unit of study: <ul style="list-style-type: none"> • Ad-hoc • Open Wi-Fi • Tethering • Hotspot • Rural • Infrastructure • Blackspots • Access rights • Cloud storage • Synchronization • 24/7/365 • Scalability • Applications • Collaboration • Online/offline • Disaster Recovery • Policies • Compatibility • Maintenance • World Teams • Multicultural • Inclusivity • Flexibility • Scheduling • Remote Working • unintentional disclosure • information theft • security controls • security breach • internal threat • password • access levels • biometrics • two-factor authentication • ethical hacking 	Tier 3 Disciplinary literacy linked to the unit of study: <ul style="list-style-type: none"> • Shared data • location-based data • GPS • transactional data • cookies • data exchange • privacy • ethics • manufacture • disposal • energy • waste • rare materials • upgrade • replace • policy settings • auto power off • power-saving • equal access • equality • net neutrality • acceptable use policies • scope • assets • monitoring • sanctions • social media • professional life • data protection • lawful processing • accuracy • data subject • right to be forgotten • trademarks • patents 	Tier 3 Disciplinary literacy linked to the unit of study: <ul style="list-style-type: none"> • Characteristics • Context • Structure • Data • Information • Table • Graphs/Charts • Sparkline • Infographic • Validation • Verification • Primary Data • Secondary Data • Sample • Privacy • Fraud

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				<ul style="list-style-type: none"> • penetration testing • system analysis • firewall • interface design • autocomplete • anti-virus • device hardening • encryption • cyber security • policy • acceptable use policy (AUP) • disaster recovery • backups 	<ul style="list-style-type: none"> • copyright • permissions • licensing • attribution • unauthorized access • unauthorized modification • malware • Data flow diagram • Information flow diagram • System diagram • Flowchart • Input • Output • Process • Decision • Variable • Chart • Range • Maximum • Minimum • Data • Information • Table • 	
Assessment	Key assessed piece End of topic assessment – User Interfaces & Design Principles Students will complete a summative assessment linked to the topics covered.	Key assessed piece Progress Test Assessment: Students will be assessed on their knowledge and understanding of both User Interfaces & Project Planning.	Key assessed piece Coursework progress (Component 1) – this coursework piece will be formally assessed to allow for feedback and improvements to be made based on the first elements of the task. <i>Total marks for this piece of coursework is 60.</i>	Key assessed piece End of topic assessment – Modern Technologies & Cyber Security Students will complete a summative assessment linked to the topics covered.	Key assessed piece End of topic assessment – Impact of Modern Technologies & Planning & Communication Students will complete a summative assessment linked to the topics covered.	Key assessed piece End of topic assessment – Data & Information / Representing information & Data collection Methods. Students will complete a summative assessment linked to the topics covered.