Our Lady's Catholic College

WJEC Level 1 /2 Vocational Award in ICT

Curriculum Overview

Our Lady's Catholic College, Morecambe Road, Lancaster, La12rx

WJEC Level 1/2 Vocational Award in ICT

Year 10

Unit	**Component 1: ICT in Society**
Big Questions	How IT can be used to fulfil the needs of organisations and individuals within society safely and effectively?
Rationale of sequencing	This unit allows learners to explore the wide range of uses of hardware, application and specialist software in society. They will investigate how information technology is used in a range of contexts, including business and organisations, education and home use. Students will cover the required theory building upon content covered at KS3 – 7.3 Networking and Cybercrime, 8.2 Digital Literacy, 8.3 Computer Systems. These units will have given students a basic understanding of some of the theory to be covered for this qualification.
Links to prior learning	7.3 Networking and Cybercrime – an understanding of what a network is, how they are set up, ICT system security threats and security measures. 8.2 Digital Literacy – use of technology to solve real world problems 8.3 Computer Systems – being able to identify key concepts of a computer system
Misconceptions	Ensure all topics are full revisited in depth, check and assess student's prior knowledge to ensure knowledge is embedded.
Term 1 and 2	**Topic: 1.1 How IT can be used to fulfil the needs of organisations and individuals** **Know:** 1.1.1 Functionality of different hardware devices 1.1.2 Functionality of different software 1.1.3 Services provided by IT **Know How:** 1.1.1 Functionality of different hardware devices Identify and discuss features of: • computing devices • input devices • output devices • storage devices • basic internal components

	• ports. 1.1.2 Functionality of different software Identify and discuss features of: • system software • application software • utility software • specialist software • information handling software • open sources software • Communication software. 1.1.3 Services provided by IT Discuss how each of the following services improves efficiency/productivity for businesses and/or individual users; Smart TV, gaming, image capture and manipulation, webcam services, social networking, services available, music and sound, mobile phones, banking, E-commerce systems, payroll, modern mail handling methods, control processes (feedback), robotics and bionics, artificial intelligence (AI) and expert systems, online shopping and searching for products on websites, booking online, registration systems, management information systems, weather forecasting systems, remote storage technologies, online education and blended learning, security systems, accessibility, virtual reality and augmented reality, 3D Printing, wearable technologies, cloud computing, disabled accessibility, emerging technologies.
Term 3	**Topic: 1.2 How data and information is used and transferred** **Know:** 1.2.1 Why data must be fit for purpose 1.2.2 How input data is checked for errors 1.2.3 How data transfers over different types of network 1.2.4 Different types of connectivity **Know how:** 1.2.1 Why data must be fit for purpose • Explain that data consists of raw facts and figures

	• Explain that information is data which has been processed by the computer
	• Explain that knowledge is derived from information by applying rules to it
	• Explain the need for good quality data
	• Describe the potential benefits of encoding data and the reasons for doing it
	• Discuss improvements in speed of access to data and increased storage
	• Identify advantages and disadvantages of using information and communication technology for storing data
	• Explain how file types, data compression and file properties are used
	
	1.2.2 How input data is checked for errors
	• Discuss data capture methods
	• Describe methods used for validation and verification and where they are appropriate
	• Explain possible sources of error which could exist
	• Discuss techniques used to overcome these errors
	
	1.2.3 How data transfers over different types of network
	• Explain the differences between local (LAN) and wide area (WAN) networks
	• Describe the purpose of protocols
	• Explain computer network operation
	• Identify network topologies including bus, star and ring
	• Explain internet/extranet/intranet
	• Identify devices within a network
	• Explain how data is transferred over a network
	• Discuss potential threats to data transfer (e.g., packet sniffing)
	• Describe cloud computing vs in-house servers
	• Analyse emerging technologies
	
	1.2.4 Different types of connectivity
	• Describe different connection methods:
	  • short range wireless connection (802.11 Bluetooth), near-field communication (NFC) and radio-frequency Identification (RFID)
	  • medium range wireless connection (3G/4G/5G)
	  • long range wireless connection (microwave, satellite)
	  • Ethernet, USB, micro USB and USB C
	• emerging technologies

Term 4 and 5	Topic: 1.3 Legal, moral, ethical, cultural and environmental impacts of IT and the need for cybersecurity **Know:** 1.3.1 Risks to information held on computers 1.3.2 The impact of data loss, theft or manipulation on individuals and businesses 1.3.3 Methods used to protect information 1.3.4 How moral and ethical issues affect computer users 1.3.5 How legal issues protect computer users 1.3.6 The cultural, personal and environmental impact of ICT 1.3.7 How a digital footprint can impact computer users **Know How**: 1.3.1 Risks to information held on computers • accidental damage • unintended disclosure by incorrectly assigned access levels • malicious software including viruses, worms, Trojan Horses, spyware, ransomware, DDoS and key logging • hacking (e.g., white, black and grey hat) • social engineering • emerging threats 1.3.2 The impact of data loss, theft or manipulation on individuals and businesses • financial implications • moral and legal implications (including competitor advantage, breaking of GDPR/DPA, open to blackmail) • data manipulation • loss of service • loss of intellectual property • Loss of reputation. 1.3.3 Methods used to protect information • logical protection including access levels, authentication, firewalls, anti-malware applications, password protection and encryption • physical protection including locks, biometrics, location of hardware, backup systems and security staff • security policies including disaster recovery, staff responsibilities, acceptable use policy and staff training • emerging technologies

1.3.4 How moral and ethical issues affect computer users

- privacy and security
- cookies and data collection by multinational companies
- monitoring of individuals
- Impact of data loss or damage.

1.3.5 How legal issues protect computer users

- General data protection regulation (GDPR) 2018
- Data protection act (DPA) 1998
- Computer misuse act 1990
- Communications act 2003
- Regulation of investigatory powers act 2016
- Copyright, designs and patents act 1988
- Health and safety legislation.

1.3.6 The cultural, personal and environmental impact of ICT

- employment patterns
- retraining
- changes in working practices (e.g., collaboration, hot desking)
- teleworking
- homeworking
- videoconferencing
- effect on transport
- effect on traditional media
- drones
- green IT and non-green IT
- e-waste
- rare earth element mining
- global production lines
- the digital divide – local and global
- social media including cyberbullying and Fake News
- net neutrality
- addiction

	• mental health • emerging technologies 1.3.7 How a digital footprint can impact computer users • digital footprint – passive and active • posts on social media • online identity • identity theft • the risks of inappropriate images
Term 6	Topic: Software skills Practice and preparation for Component 2. **Know:** • What software should be used for given scenarios • The tools and features of a range of software applications • Strengths and weaknesses of digital assets **Know how:** • Select relevant software to use for a range of scenarios • Analyse scenarios and make suggestions for solutions • Design solutions for various real-life problems • Apply relevant and suitable software tools and features • Evaluate digital assets and make suggestions for improvements

Year 11

Unit	Component 2: ICT in Context
Big Question	How IT can be used to solve problems in vocational settings?
Rationale of sequencing	This unit enables learners to gain a broad working knowledge of databases, spreadsheets, automated documents and images and to apply their knowledge and understanding to solve problems in vocational settings. Learners will need to draw on knowledge of how IT can be used to fulfil the needs of organisations and individuals, how data and information is used and transferred (particularly why data must be fit for purpose and how input data is checked for errors).
Links to prior learning	8.2 Digital Literacy – use of technology to solve real world problems 9.1 Graphics Year 10 - 1.1 How IT can be used to fulfil the needs of organisations and individuals Year 10 - 1.2 How data and information is used and transferred (particularly 1.2.1 Why data must be fit for purpose, and 1.2.2 How input data is checked for errors)
Misconceptions	Ensure all topics are full revisited in depth, check and assess student's prior knowledge to ensure knowledge is embedded.

Term 1	**Topic: 2.4 Planning, creating, manipulating and storing images** **Know**: 2.4.1 Planning and designing an image 2.4.2 Creating and modifying an image using appropriate tools and techniques 2.4.3 Storing the image appropriately and outputting the final image in a format that is fit for purpose **Know how:** 2.4.1 Planning and designing an image • analyse requirements to a specified brief • identify success criteria • plan design (sketches and layouts) with annotations • identify and select image source self-taken (camera/scanner) images from 3rd party: images from internet or another secondary source • identify key qualities of image (e.g., size, format) and limitations to editing • identify any copyright or intellectual property rights and reference source 2.4.2 Creating and modifying an image using appropriate tools and techniques • compare file types (png, tiff, jpeg) and fitness for purpose (size, resolution, scalability) • select software according to image type (vector/raster) • select image properties (RGB/CMYK) and canvas size based on output requirements • import image/create image using tools/create hybrid image • use standard and advanced tools to create and modify image Standard: Select marquees, lassos, cut, copy, crop, move, group, rotate, distort, enlarge/shrink, magic wand, bring to front/send to back, brushes/pencil, adjust line thickness/style, simple lines, shapes, curves (freehand and auto), fill, add text, edit text Advanced: Blur, blend, smudge, sharpen, colour mode, brightness, contrast, layers, merge layers, masking/mask layer, change alpha, cloning, background eraser, airbrush, gradient 2.4.3 Storing the image appropriately and outputting the final image in a format that is fit for purpose • store image(s) using version control • store images using appropriate file type (vector or raster) • output final version in optimised format • test the file types electronically and digitally for fitness for purpose • evaluate final product against success criteria, identifying possible improvements

Term 1 and 2	**Topic 2.2 Planning, creating, modifying and using spreadsheets** **Know:** 2.2.1 Planning and designing a spreadsheet 2.2.2 Creating and formatting a spreadsheet 2.2.3 Use of appropriate data formatting and adding suitable validation rules 2.2.4 Use of appropriate formulae and functions to meet set outcomes 2.2.5 Arranging, reducing and outputting data to help make decisions 2.2.6 Modifying data and formulae to model 'what if' scenarios 2.2.7 Testing and evaluating spreadsheets **Know how:** 2.2.1 Planning and designing a spreadsheet • analyse requirements to a specified client brief • identify success criteria • design a spreadsheet structure including worksheets, navigation, formulae, tools and techniques to be applied 2.2.2 Creating and formatting a spreadsheet • import data from a CSV file and generate content of their own • enhance layout and format of the spreadsheet including font style; font size; enhanced grids/borders; titles; colours; merged cells; cell alignment; text wrap; headers or footers; forms; worksheet tab • facilitate data entry through use of form controls, e.g., buttons, check box, drop-down lists, combo boxes, spinners, scroll bar • define a print area in order to present a customer-friendly output • create a navigation menu in order to customise and simplify the client's use of the workbook 2.2.3 Use of appropriate data formatting and adding suitable validation rules • data formatting, (e.g., currency, %, decimal places) • conditional formatting • use of date/time function • facilitate data entry through use of validation form controls, e.g., drop-down lists, combo boxes, spinners, scroll bar • validation checks, e.g., range, type, presence, format • validation messages 2.2.4 Use of appropriate formulae and functions to meet set outcomes • formula with single operator (+, -, *,/) • brackets to prioritise calculation

	• simple function SUM, AVERAGE, MAX, MIN, RAND, COUNT, COUNTA, COUNTIF, INT/ MOD • relative and absolute referencing • complex functions e.g., IF, nested IF, IF(OR), IF(AND), SUMIF, AVERAGEIF, VLOOKUP, COUNTIF, goal seek, pivot tables • macros to link native function 2.2.5 Arranging, reducing and outputting data to help make decisions • use sorting on single items • use sorting on multiple items • use filters • create a chart/graph with appropriate title legend axis labels and formatting. 2.2.6 Modifying data and formulae to model 'what if' scenarios • what if' investigations to change data • 'what if' investigations to change formula. 2.2.7 Testing and evaluating spreadsheets • provide a test plan and select a range of test data including valid, extreme and erroneous data • use a test table, based on the success criteria • give detailed reasons for all testing methods • give evidence for the testing carried out • evaluate the testing successes and failures and identify improvements • suggest how to implement these improvements
Term 2 and 3	**2.1 Planning, creating, modifying and using databases** **Know:** 2.1.1 Planning and designing a database 2.1.2 Creating and modifying a database 2.1.3 Interrogating a database 2.1.4 Creating user interfaces 2.1.5 Testing and evaluating a database **Know how:** 2.1.1 Planning and designing a database • analyse requirements to a specified client brief • identify success criteria

	• identify the different entities within a specified client brief • design a database structure including tables, relationships, forms, queries, reports, fields, primary and foreign keys, data types, field properties, validation rules minimising data redundancy • give detailed justification for field types used 2.1.2 Creating and modifying a database • add fields • create a primary key • assign appropriate data types • apply effective validation rules and error messages • link tables using key fields and relationships • import data from a given CSV file • add, edit and delete records • check and test data to ensure it is error-free 2.1.3 Interrogating a database • create select queries, using a query builder including single table/single criteria; multiple tables/multiple criteria; wildcard; parameter, calculations • produce reports from queries, with at least one report showing customisation for fitness of purpose 2.1.4 Creating user interfaces • create effective data entry forms that simplify data entry and navigation, include relevant fields and accept data and validation • enhance layout of the form to include an image for business purposes • add features and controls that make the system user friendly and allow the user to navigate records, forms, queries and reports easily, visual basic (VB) and/or macro. 2.1.5 Testing and evaluating a database • provide a test plan and select a range of test data including valid, extreme and erroneous data • give detailed reasons for all testing methods • give evidence for the testing carried out to test plan including evidence of test pass/fail • evaluate the testing successes and failures and identify improvements
Term 3 and 4	**2.3 Planning, creating and modifying an automated document** **Know:** 2.3.1 Planning and designing an automated document 2.3.2 Creating an effectively structured data source and linking this to a standard document

	2.3.3 Appropriately structuring the content of the standard document and inserting fields as required 2.3.4 Merging and outputting final documents **Know How**: 2.3.1 Planning and designing an automated document • analyse requirements to a specified client brief • identify success criteria • design a standard document including location of place holders, formatting and features to be used 2.3.2 Creating an effectively structured data source and linking this to a standard document • create a standard document • create a source document • create appropriately divided fields • create appropriate data within the fields • create a link between the data source and standard document 2.3.3 Appropriately structuring the content of the standard document and inserting fields as required • insert appropriate fields: address line; subject; salutation/ valediction; personalised content within document • check accuracy: spelling; grammar; proofread • add appropriate formatting and features: letterhead; watermark; auto date; alignment; set line spacing; justification; indexing; automatic fields; bullets; appropriate layout 2.3.4 Merging and outputting final documents • complete the merge and check accuracy • check formatting following insertion of merged data • output merged documents • evaluate the document and identify improvements
Term 4 and 5	**Topic: Revision**