The Abbey School
A Business and Enterprise Academy

Subject: ICT

Year 13 – BTEC L3 IT
Scheme of Work 2021 – 2022
Unit 1 – Information Technology Systems (120GLH)

Mr. C Edwards

For term 1-3 see unit 1 SoL and for Term 3-6 see unit 6 SoL

Topics by Term	Topic Overview for Year Group					
	Term 1	**Term 2**	**Term 3**	**Term 4**	**Term 5**	**Term 6**
Topics Taught	***Topic A: Digital devices in IT systems*** Digital devices, their functions and use Peripheral devices and media Computer software in an IT System Emerging technologies Choosing IT systems **Learning Aim A assessment.** ***Topic B: Transmitting data*** Connectivity Networks Issues relating to the transmission of data	**Topic D: Protecting data and information** Threats to data, information and systems Protecting data **Learning Aim D assessment.** **Topic E: Impact of IT systems** Online services Impact on organisations Using and manipulating data **Learning Aim E assessment.**	**Assessment and revision** Mock exams ready for exam January 2021 **<u>See Unit 6 SoW</u>** **Learning aim B: Design a website to meet clientrequirements** **Assignment 2** Website design Common tools and techniques used to produce websites Hand Real Assignment 2 for marking	**Learning aim C: Develop a website to meet client requirements** Client-side scripting languages Website development	**Continue Learning aim C: Develop a website to meet client requirements** Client-side scripting languages Website review Website optimisation Skills, knowledge and behaviours Hand Real Assignment 3 for marking **Unit 2 Controlled assessment preparation and exam for resits in May 2022 provisional/estimate**	Unit 1 written preparation and exam dated **June 2022 provisional/estimate**

	Learning Aim B assessment. **Topic C: Operating online** Online systems Online communities **Learning Aim C assessment.**	**Topic F: Issues** Moral and ethical issues Legal issues **Learning Aim F assessment.**				
Week Times	6 Weeks	7 Weeks	6 Weeks	6 Weeks	6 Weeks	7 Weeks

Year 13 / Term 1

BTEC Level 3 Extended Certificate in Information Technology
Unit 1 – Information Technology Systems
Link to resources on the team's site.
Each lesson should take 1 period with some covering two. Leeway has been included at the end of each learning aim to make up for any time lost.
Important: To access the teacher lesson resources you must log into the teams site and for the quizzes, Know it all Ninja.

PG Online resources have been developed for use with this scheme of learning.

Specification o References	Periods	Topic Area: Main Items	Outcomes that students should be able to	Key Terms / Concepts (literacy)	Assessment	Resources
	9	**(1) Learning Aim A: Digital devices in IT systems** **Big Questions:** 1. What is a digital device and how are they used? 2. What is the function of a digital device? 3. What is the purpose of a digital device? 4. How does data flow around a system? 5. How can a system be automated 6. What is accessibility in a computer system? 7. What are the main types of storage media? 8. What is the purpose an operating system? 9. What are the main types of user interface? 10. What are the main features of common file formats? 11. What are the impacts of emerging technologies? **The BQ's have been embedded in the lesson below. Please use these as a guide to support each lesson**				
Learning Aim A	**1**	**Lesson 1:** **A1 Digital devices, their functions and use** **A2 Peripheral devices and media**	**Big Question:** What is a digital device and how are they used? • Describe digital devices that form part or all of IT systems: • multifunctional devices, personal computers, mobile devices, servers, entertainment systems • digital cameras – still, video	multifunctional devices AIO MFD Standalone computer personal computers mobile devices servers	**Click here for full breakdown of topic 1.** Personal Developmen: Cost of living	Topic 1 Worksheet 1 .docx Topic 1 Worksheet 1 answers.docx Topic 1 Digital devices.ppt **Link:** https://map.what3words.com/ **Other supporting resources:** • Input devices: www.computerhope.com/jargon/i/inputdev.htm

			• navigation systems, data capture and collection systems, communication devices and systems	entertainment systems		• Output devices: www.computerhope.com/jargon/o/outputde.htm **Homework: Digital Devices** https://www.knowitallninja.com/lessons/digital-devices-1/
	1	**Lesson 2:** **A1 Digital devices, their functions and use** Function and use of digital devices – education and training. **A2 Peripheral devices and media** **C1 Online systems**	**Big Question:** What is the function of a digital device? **Describe the function and use of digital devices for:** • **education and training** • **personal** • **social** • **retail** • **organisational use – business operations, internal and external dissemination of information** • **creative tasks**	digital cameras – still, video DAB SLR navigation systems GPS data capture and collection systems communication devices and systems. Broadband education and training	**Click here for full breakdown of topic 2.** Personal Development: how can digital device help our daily lives	Topic 2 The function and use of digital devices.ppt Topic 2 Worksheet 2.doc Topic 2 Worksheet 2 answers.docx **Links:** **Link - Andy Serkis Motion Capture [5m31s]** https://www.youtube.com/watch?v=DpRLTfVEhMk **Link - How edX works [2m16s]** https://www.youtube.com/watch?v=B-EFayAA5_0 **Link - Inside Boxed automated warehouse [2m03s]** https://www.youtube.com/watch?v=vVF83PsPjSo **Link - Introducing Amazon Go [1m49s]** https://www.youtube.com/watch?v=NrmMk1Myrxcv Education www.youtube.com/watch?v=mzi2RIt8_nkand www.youtube.com/watch?v=2N1I6sOhDiw **Homework: Digital devices** https://www.knowitallninja.com/lessons/digital-devices-2/
	1	**Lesson 3:**	**Big Question:**	personal		

		A1 Digital devices, their functions and use
		Function and use of digital devices – Personal/social.
		A2 Peripheral devices and media
		C1 Online systems
		C2 Online communities
			What is the purpose of a digital device?
			
			Describe:
			• **peripheral devices used with other digital devices to form part of an IT system:**
			  • **input devices**
			  • **output devices**
			  • **storage devices**
			• **manual and automatic data processing**
			• **accessibility devices**
			• **characteristics and implications of storage media used to form part of an IT system**
			
			Focus: Personal Social use
				social	**Click here for full breakdown of topic 2.**	Topic 3 Peripheral devices and media.ppt
						Topic 3 Worksheet 3.docx
						Topic 3 Worksheet 3 answers.doc
						Video Link:
						Link - Waymo 360 Experience [3m36s]
						https://www.youtube.com/watch?v=B8R148hFxPw
						Homework: Uses of digital devices
						https://www.knowitallninja.com/lessons/uses-digital-devices-1/

	2	**Lesson 4-5** **A1 Digital devices, their functions and use** Function and use of digital devices – retail. **A2 Peripheral devices and media** **E1 Online services**	**Big Question:** How does data flow around a system? **All pupils will understand the of input-process-output and common components of an IT system that provides these functions** **Focus: Retail**	retail	• **Lead-in:** Discuss the use of IT in retail identifying key areas where IT may be used (eg customer service, supporting staff or logistics). • **Independent learning activity 1:** Learners to conduct independent research on use of IT systems in retail. See links to videos on Inside Amazon and Amazon's robot army in the resources column. • **Independent learning activity 2:** Learners to prepare questions and areas of further clarification required ahead of guest speaker/visit. • **Guest speaker:** A manager or technical support specialist from the retail sector should visit to give a talk on the use of IT systems (this could be substituted/combined with a visit to a	• Computers with internet access for research. • Notepads and pens, computers and tablets for notetaking. • Video links for activity 1: Inside Amazon www.youtube.com/watch?v=zknLfU7GJIw Amazon's robots www.youtube.com/watch?v=g6DIFpaoI6A www.youtube.com/watch?v=UtBa9yVZBJM

					large, local retail outlet to examine their use of IT systems). Learners to make notes of their findings and observations.	
	2	**Lesson 6-7:** **A1 Digital devices, their functions and use** Function and use of digital devices –organisational use. **A2 Peripheral devices and media** **C2 Online systems** **E1 Online services**	**Big Question:** How does data flow around a system? **All pupils will understand the input-process-output and common components of an IT system that provides these functions** **Focus: Organisational use**	organisational use CNC business operations internal and external dissemination of information	• **Lead-in:** Discuss the use of IT in a vocational/business environment, identifying key areas where IT may be used (eg customer service, supporting staff, completing office tasks or collaborative working). • **Independent learning activity 1:** Learners to conduct independent research on use of IT systems in business/organisations. See links to videos on IT in business and Supply and IT for more information in the resources column. • **Independent learning activity 2:** Learners to prepare questions and areas of further clarification required ahead of guest speaker/visit. • **Guest speaker where possible:** A manager or technical support specialist from a local employer should give a talk on the use of IT systems (this could be substituted/combined with a visit to a large, local business to examine their use of IT systems). Learners to make notes of their findings and observations.	• Computers with internet access for research. • Notepads and pens, computers and tablets for notetaking. • Video links for activity 1: IT in business www.youtube.com/watch?v=5Ik7rNkODTw Supply and IT www.youtube.com/watch?v=SXDvHgjRNDQ **Homework: Uses of digital devices** https://www.knowitallninja.com/lessons/uses-digital-devices-2/ • List of command words and meanings. • Assessment tasks.
	1	**Lesson 8:** **A1 Digital devices, their functions and use** Function and use of digital devices – retail.	**Review/recap lesson**		• **Lead-in:** Introduce the lesson/learning consolidation activity. • **Tutor presentation:** Discuss the command verbs used and how learners should structure their answers when	

		Function and use of digital devices – organisational use. **A2 Peripheral devices and media** **E1 Online services**			presented with them. Definitions are in the specification. • **Independent activity**: Give learners a series of exam-style questions on IT use in retail and organisations. The tasks should have realistic vocational scenarios and consist of a variety of short, long and diagrammatical question responses.	• Assessment tasks with feedback. • Computers with internet access for research.
	1	**Lesson 9:** **A1 Digital devices, their functions and use** Function and use of digital devices – creative tasks. **A2 Peripheral devices and media** **C2 Online systems** **E1 Online services**	**All pupils will understand the input-process-output and common components of an IT system that provides these functions** **Focus: Creative tasks**	creative tasks	• **Lead-in**: Introduce the lesson. Give learners brief feedback on the assessment activity. Identify and highlight common issues/good practice relating to linking thoughts and ideas. • **Independent learning activity**: Learners to conduct research, and draw on their own experiences to produce notes on IT systems used for creative tasks. • **Class discussion**: As a class, discuss findings and share ideas. • **Independent learning:** Homework activity **–** learners to work through their assessment from previous lesson and improve their answers.	• Computers with internet access for research. • Activity link: www.quora.com/Is-automated-data-processing-or-manual-data-entry-the-best-option-Why **Homework: Input and output devices** https://www.knowitallninja.com/lessons/input-output-devices-2/
	1	**Lesson 10:** **A2 Peripheral devices and media** Manual and automatic data processing.	**Big Question:** How can a system be automated? **All pupils will know the importance of data processing in and IT system**	Hardware Software Input devices Output devices Storage devices.	• **Tutor presentation**: Introduce the lesson and explain the importance of data processing within an IT system and its role in fulfilling key tasks in a range of sectors. • **Independent learning activity:** Learners to conduct research, into the devices and peripherals that are used to aid	• Scenarios for task. • Computers with internet access for research. • Flipchart or similar for learners to record discussions and ideas. • Video link for activity: Automated data capture

	1	**Lesson 11:** **A2 Peripheral devices and media** Manual and automatic data processing. **A5 Choosing IT systems**	**Big Question:** How can a system be automated? **All pupils will be able to identify how specific manual and automatic data processing devices/systems**	Manual and automatic data processing.	manual and automatic data processing (ie devices that capture, process and output data into systems). See link in the resources column: 'Is automated data processing or manual data entry the best option?' • **Small group discussion**: In pairs or small groups, learners discuss their findings and share ideas. • **Independent learning:** Set learners a challenge to identify an example emerging/novel/interesting use of data processing (eg RFID, or QR codes). • **Lead-in:** Learners to share their findings from the homework activity. • **Small group activity:** Sort learners into groups of three. Give each group a vocational scenario within one of the identified sectors (ie a company/individual and the aims of their vocational context). As a group, learners should identify how specific manual and automatic data processing devices/systems would aid them in achieving their aims. See video link on automated data capture in resource column for more information. • **Class discussion:** Each group to present a summary of their scenario and solution to the rest of the class.	www.youtube.com/watch?v=8ynC60PHBtc **Homework: Storage devices** https://www.knowitallninja.com/lessons/storage-devices-2/ • Scenarios for task. • Computers with internet access for research. • Link for activity 2: www.abilitynet.org.uk/sites/abilitynet.org.uk/files/AbilityNet%20Top%20Ten%20Accessible%20Apps.doc **Homework: Data processing and accessibility** https://www.knowitallninja.com/lessons/data-processing-accessibility-devices/
	2	**Lesson12-13:** **A2 Peripheral devices and media** Accessibility devices.	**Big Question:** What is accessibility in a computer system? **All pupils will be able to define the main accessibility systems used**	Accessibility devices. Alt Text	• **Lead-in:** Introduce the lesson. Give learners a brief introduction to the definition and purpose of accessibility devices. • **Independent learning activity 1:** Learners to conduct initial research into the types of accessibility devices that	• Scenarios for task. • Computers with internet access for research. • Links for activity: Storage devices www.computerhope.com/jargon/s/stordevi.htm Storage devices and media

	1 1	**A4 Emerging technologies** **A5 Choosing IT systems** **Lesson 14:** **A2 Peripheral devices and media** Characteristics and implications of storage media used to form part of an IT system. **A4 Emerging technologies** **A5 Choosing IT systems** **Lesson 15:**	**Big Question:** What are the main types of storage media? **Al pupils will know the different between the storage mediums and memory of a computer system.**	Storage media	improve access to IT systems. Learners should make brief notes. • **Independent learning activity 2**: Give learners a series of scenarios involving accessibility requirements. In each case, learners should suggest systems and devices that could be used to improve accessibility. They should justify their suggestions. See link on some ideas around accessibility apps (in addition to devices) in the resources column. • **Small group discussion:** In pairs or small groups, learners discuss their responses. • **Lead-in:** Introduce the lesson. Highlight the difference between storage and memory and the different role each plays in an IT system. • **Small group activity:** Learners conduct initial research into different storage media covering: internal, external, flash, magnetic and optical. See links on storage devices, storage devices and media and Box Cloud Storage Review in the resources column. • **Knowledge quiz:** Hold a brief informal quiz to check learners' understanding of the characteristics of storage media. • **Independent activity:** Give learners a realistic/vocational scenario and ask them to analyse to what extent different storage media would meet requirements. • **Tutor presentation:** Introduce the lesson. Discuss with learners the concept of operating systems in large-	www.youtube.com/watch?v=CaLkwKSQZSY Box Cloud Storage Review www.youtube.com/watch?v=Aqld5Y6WCE4 • Computers with internet access for research. • Example devices/systems with different operating systems. • Links for activity: Android v IOS v Windows www.trustedreviews.com/opinions/which-mobile-operating-system-is-best Mobile operating system comparison https://en.wikipedia.org/wiki/Comparison_of_mobile_operating_systems **Homework: Types and role of operating system** https://www.knowitallninja.com/lessons/types-role-operating-systems/ • Exam-style question (utility and application software). • Computers with internet access for research.

		A3 Computer software in an IT System Types of operating system. The role of operating systems. Factors affecting the choice of operating system. The principles and implications of open-source and proprietary operating systems.	**Big Question:** What is the purpose an operating system? **All pupils will know the main types of operating systems used in a computer system.**	real-time operating system single-user single task single-user multi-tasking multi-user. Networking security memory management multi-tasking device drivers	and small-scale systems introducing the main roles of the operating systems (A3.2). • **Small group activity:** Give some examples of different types of operating systems on different devices for learners to explore. See links: 'Android vs IOS vs Windows 10 Mobile: Which OS is best?' and comparison of mobile operating systems in the resources column. • **Independent learning activity:** Learners to conduct research, into the features and roles of different operating systems and how their implementation differs on different devices (e.g. desktop computer operating system compared with a mobile operating system) • **Small group activity:** In pairs, learners should explore the sources and concepts and implications of open-source operating systems.	• Links for activity: MS Office 365 www.youtube.com/watch?v=SG6OFF4_j58 Open-Source vs Proprietary Software www.optimusinfo.com/downloads/white-paper/open-source-vs-proprietary-software-pros-and-cons.pdf • Example devices/systems with different interfaces. • Computers with internet access for research. • Flipchart or similar for learners to record discussions and ideas. **Homework: the choice of user interface** https://www.knowitallninja.com/lessons/choice-use-of-user-interfaces/
	1	**Lesson 16:** **A3 Computer software in an IT System** Utility software. Application software. The principles and implications of open-source and proprietary software.	**Big Question:** What is the purpose an operating system? **All pupils will understand the concept of utility software and application software and the distinction between the two.**	Operating system App Interface Platform	• **Tutor presentation:** Introduce the lesson. Discuss with learners the concept of utility software and application software and the distinction between the two. • **Independent learning activity:** Learners investigate the implementation of utility software and application software on different devices. For example, how might a mobile version of a productivity suite differ on a mobile device to a desktop PC? See links on	• Scenarios for task. • Example files for task. • Computers with internet access for research. • Activity link: https://pixabay.com/ **Homework: Image and video file types** https://www.knowitallninja.com/lessons/image-video-file-types/

					Microsoft Office 365 across devices and operating systems and Open-Source vs Proprietary Software Pros and Cons in the resources column. • **Small group activity:** In pairs, learners should explore the sources and concepts and implications of open-source operating systems • **Independent activity:** Learners to respond to an exam-style question relating to utility and application software.	
	1	**Lesson 17:** **A3 Computer software in an IT System** Factors affecting the choice and use of user interfaces. The impact and features of user interfaces in computer software.	**Big Question:** What are the main types of user interface? **All pupils will know the factors that may affect the choice of interface.**	GUI Menu Software developer Data engineer	• **Lead-in:** Give learners opportunities to explore different devices, programs and systems that utilise different types of interface. • **Small group activity 1:** Split the class into at least four groups. Assign each group one of the types of interface listed in topic A3. As a group, they should prepare a short presentation highlighting the features, potential uses and implications of their assigned interface. • **Small group activity 2:** Each group to take turns to present their findings to the rest of the class.	• Computers with internet access for research. • Presentation/screen sharing facilities. • Link for activity: www.technologyreview.com/lists/technologies/2016/ **Homework: The implications of emerging technologies** https://www.knowitallninja.com/lessons/implications-of-emerging-technologies/
	1	**Lesson 18:** **A3 Computer software in an IT System** Features of common files and formats.	**Big Question:** What are the main features of common file formats?	File types/extensions **Web** HTML	• **Tutor presentation:** Introduce the lesson. Give learners an overview of the concepts of file types and formats with reference, in particular, to images, video and applications software.	• Specification extract to support learners (A5.1). Scenarios for task. **Homework: Factors affecting the choice of IT system**

		The implications on IT systems, individuals and organisations of the use and selection of file types and formats. **B3 Issues relating to the transmission of data** The use and implications of codecs when using and transmitting audio and video.	**All pupils will know the features of the common files and formats.**	JS **Graphical** Bitmap TIFF JPEG GIF RAW **Video** MOV AVI MP4 Common Doc, ppt, xls, svg	• **Paired activity:** Give each pair access to a range of different file formats (eg common application formats, compressed files, software specific files, videos that require codecs). Give learners a series of scenarios and get them to explore the properties of each of the files to explore how the file format and type would impact on the given scenario. Saving an original image in different file formats will give learners an opportunity to see what the impact of different file formats will be on the quality of an image. See link in the resources column for access to some free high-quality images that the learners can use. **Class discussion:** Learners discuss the outcomes of the file format task (eg how size affected their use or requirement to install software).	https://www.knowitallninja.com/lessons/factors-affecting-choice-of-it-system/ AS part fo the revision, pupils are to complete all homework tasks that are missing from the section: **Computer Software in an IT system** Link: https://www.knowitallninja.com/modules/computer-software-in-an-it-system/
	2	**Lesson 19-20:** **A4 Emerging technologies**	**Big Question:** What are the impacts of emerging technologies? **All pupils will be able to explain what the technology is, how it is being used and identify an impact it may have on any area of information technology**	Early adopter World wide web internet	• **Lead-in:** Introduce the concept of emerging technologies. Explain how technology and IT systems are constantly evolving and the impact this has on individuals and organisations. • **Individual activity:** Learners should prepare a short presentation, based on individual research, about an emerging technology. The presentation should explain what the technology is, how it is being used and identify an impact it may have on any area of information technology. The technology can be for any use, and can be software or hardware based but should not be an established brand. See link on MIT	

					Review of 10 breakthrough technologies in 2016 in the resources column. **Class activity:** Learners should take it in turns to present their work to the rest of the class. Members of the groups should be prepared to answer questions posed by the audience.	
	2	**Lesson 21-22:** **A5 Choosing IT systems**	**Big Question:** What are the impacts of emerging technologies? **All pupils will be able to consider how/why a technology is used and how it impacts on individuals and/or organisations**	user experience, ease of use, performance, availability accessibility user needs specifications compatibility connectivity cost efficiency implementation – timescales, testing, migration to new system(s) productivity security.	• **Lead-in:** Through a Q&A session, remind learners of different areas of the syllabus studied so far (topic A). Introduce the task that they will be focusing on in this lesson. Highlight that they should be able to apply knowledge in context and should be able to consider how/why a technology is used and how it impacts on individuals and/or organisations. Draw learners' attention to the factors affecting the choice of digital technology. **Individual activity:** Give learners a vocational scenario that requires them to identify and justify how digital devices could be used to meet identified needs. The given scenario should be detailed enough for learners to consider, analyse choose and justify how different devices and systems could be used. Their response should be presented as a formal written report.	

					Personal Development: discuss impacts of emerging technologies	
		Topic A Assessment **Objectives**: Students will: • Apply their knowledge in answers to a range of questions • Be able to highlight areas of strength and any gaps in their understanding of this learning aim **The test has been designed to be printed and answered by hand.** Students should complete the Assessment Test (up to 1 hour). **Activities/Resources** To be developed in advance by the teacher responsible for the Learning Aim. Click here for previous exam papers for use when creating mocks.				
		(2) Learning Aim B: Transmitting data **Big Questions:** **1. How are devices connected?** **2. How is data transmitted what are the implications?** **3. What are the features of connection types and how can they meet the needs of individuals or organisations?** **4. What are the features, use and purpose of different types of networks and how do affect an individual or organisation?** **5. What are the factors affecting the choice of network: user needs, specifications, security, cost, connectivity?** **6. How the features of a network and its component parts affect the performance of an IT system?** **7. What is a protocol and how is this used in the transmission of data?** **8. What is data compression?** **9. How can diagrams show how an IT system works?** **PG Online resources have been developed for use with this scheme of learning.**				
Learning Aim B	**1**	**Lesson 23:** **B1 Connectivity** Wireless and wired methods of connecting devices and transmitting data.	**BQ: How are devices connected?** **All pupils will know the main wireless and wired methods of connecting devices and transmitting data.**	Sync Bandwidth	• **Lead-in:** Introduce the lesson. Ask learners to name as many connection types as they can think of, grouping them into wired and wireless connections. • **Class activity:** Give feedback on the list that the learners compiled. Suggest any connections that they may have missed. • **Group activity:** In groups, ask learners to discuss and make notes regarding what they know about each of the	• Flipchart or similar for learners to record discussions and ideas. • Scenarios for plenary. **Homework:: Wired methods of connecting a device**

	1	**Lesson 24:** **B1 Connectivity** Wireless and wired methods of connecting devices and transmitting data. How the features of connection types can meet the needs of individuals and organisations. The implications of selecting and using different connection types. The impact of connection types on the performance of an IT system.	**BQ: How is data transmitted what are the implications?** ***What are the features of connection types and how can they meet the needs of individuals or organisations*** ***All pupils will be able to explore the concept of how the choice of connection type affects the performance of a larger system.***	personal area network (PAN) local area network (LAN) wide area network (WAN) virtual private network (VPN).	connection types, such as uses, benefits and limitations. • **Class discussion:** Discuss the learners' outcomes, correcting any misconceptions and technical inaccuracies. • **Plenary:** Give learners scenarios that require use of connections to transmit data within and between systems. Learners should describe the process of transmitting/transferring data with particular reference to the different connection methods that could be used at each stage • **Lead-in:** Introduce the lesson. Use Q&A to check learners' understanding of the topics from last lesson. • **Class discussion:** Explore the concept of how the choice of connection type affects the performance of a larger system. Netgear have produced a pdf that explores how you conduct a site survey to add users to a wireless network and how to do this successfully – see link in the resources column. • **Individual activity:** Give learners a vocational scenario that would require the connection of multiple devices and/or systems to meet a range of aims. Learners should: ○ create a diagram showing how the systems will connect ○ annotate the diagram to explain the connections used, the data being transferred and the direction of data transfer	https://www.knowitallninja.com/lessons/wired-methods-of-connecting-devices/ • Scenarios for tasks. • Link for discussion: • www.netgear.co.uk/images/pdf/WP_WirelessSiteSurveys.pdf **Homework:: Wireless methods of connecting a device** **https://www.knowitallninja.com/lessons/wireless-methods-of-connecting-devices/**

					○ justify their choice of connections used in comparison to other possible connections.	
	1	**Lesson 25** **B2 Networks** The features, use and purpose of different networks.	***BQ:*** ***What are the features, use and purpose of different types of networks and how do affect an individual or organisation?*** ***All pupils will understand the features, use and purpose of different networks.*** **Personal Development: Data protection**		• **Lead-in:** Introduce the lesson. Draw learners' attention to the four main types of network listed in B2. • **Independent learning activity:** Learners to conduct research, and draw on their own experiences to produce notes on each of the four networks. They should include the components required to form the network, benefits, drawbacks etc. • **Class discussion:** As a class, discuss findings and share ideas. • **Note**: If time and resources allow, supplement/extend this lesson with a practical activity allowing learners to create different small scale networks.	• Computers with internet access for research. **Homework: Types of networks** https://www.knowitallninja.com/lessons/types-of-networks-2/
	1	**B2 Networks** The features, use and purpose of different networks. The factors affecting the choice of network. How the features of a network and its components affect the performance of an IT system.	***BQ: How the features of a network and its component parts affect the performance of an IT system?*** **All pupils will know the main factors that affect the choice of network.**	user experience – ease of use, performance, availability, accessibility user needs specifications connectivity cost	• **Lead-in:** Introduce the lesson. Use Q&A to check learners' understanding from the last lesson. • **Class discussion:** Explore the factors affecting the choice of network. • **Individual activity:** Give learners a vocational scenario detailing the use of different networks (the scenario should contain examples of good and not so good practice). Learners should evaluate the choice of network/networks, suggesting	• List of factors to support learners (spec extract B2.2). • Scenario(s) for task. **Homework: Factors affecting the choice of network**

				efficiency compatibility implementation - timescales, testing, downtime productivity security.	improvements and alternatives, as appropriate.	https://www.knowitallninja.com/lessons/factors-affecting-choice-of-network/
	1	**Lesson 27:** **B3 Issues relating to the transmission of data** Protocols used to govern and control data transmission for common tasks.	**BQ:** ***What is a protocol and how is this used in the transmission of data?*** **All pupils will know the main protocols used to govern and control data transmission for common tasks.**	Bandwidth Latency ISDN Intranet Extranet	• **Lead-in:** Introduce the lesson. Explain the concept of protocols (what they are used for and why). • **Independent learning activity:** Learners to conduct research on the protocols used for common IT tasks. See link on UDP and TCP: Comparison of Transport Protocols in the resources column. • **Class discussion:** As a class, discuss findings and share ideas.	• Computers with internet access for research. • Video link for activity: www.youtube.com/watch?v=Vdc8TCESIg8 **Homework: Data transmission protocols** https://www.knowitallninja.com/lessons/data-transmission-protocols/
	1	**Lesson 28:** **B Transmitting data** The implications of selecting and using different connection types. The impact of connection types on the performance of an IT system. How the features of a network and its components affect the performance of an IT system. Factors affecting bandwidth and latency.	***What is data compression?*** **All pupils will understand the implications of bandwidth and latency on the use and performance of an IT system.**	Protocols - Email, voice and video, web pages, secure payments Encryption	• **Lead-in:** Introduce the lesson by exploring the concept of bandwidth and latency and some of the factors that may affect them. • **Small group activity:** Supply each group with a different scenario detailing a series of connected devices and systems. The scenario should give details of a range of connection types and the type of data to be transferred. As a group, the learners should identify areas of the system that would have greater/less bandwidth, and where latency might occur. The groups should suggest ways in which the system might be improved.	Scenarios for tasks. **Homework: Data transmission security issues** https://www.knowitallninja.com/lessons/data-transmission-security-issues/

	1	The implications of bandwidth and latency on the use and performance of an IT system. **Lesson 29:** **B3 Issues relating to the transmission of data** Types of compression. The applications and implications of data compression. The use and implications of codes when using and transmitting audio and video in digital format.	**All pupils will know the types of compressions used when transmitting data.**	Bandwidth Latency Compression Lossy Lossless Ping Latency Bit Codec	• **Class discussion:** One person from each group to feed back the outcomes of their group task to the rest of the class. • **Lead-in:** Introduce the lesson. Explain the concept of compression (what it is used for and why and how it works). • **Independent learning activity**: Based on independent research, learners to produce a technical 'help manual' explaining the concept of compression, different types of compression (including codecs), and its application and implications on individuals and organisations. See video links 'Compression Types Lossy Lossless' and 'Better Dialogue Audio: Compression and Normalisation' in the resources column.	• Computers with internet access for research. • Video links for activity: Compression types www.youtube.com/watch?v=q5e2dZ_8ESU Compression and Normalisation www.youtube.com/watch?v=9kal7soRvT0 **Homework: Bandwidth, latency and compression** https://www.knowitallninja.com/lessons/bandwidth-latency-compression/
		Topic B Assessment **Objectives**: Students will: • Apply their knowledge in answers to a range of questions • Be able to highlight areas of strength and any gaps in their understanding of this learning aim **The test has been designed to be printed and answered by hand.** Students should complete the Assessment Test (up to 1 hour). **Activities/Resources** To be developed in advance by the teacher responsible for the Learning Aim. Click here for previous exam papers for use when creating mocks.				

<table>
<tr><td></td><td></td><td colspan="5">(3) Learning Aim C: Operating online

Big Questions:
1. What is the difference between cloud storage and cloud computing?
2. What is an online community
3. How do communities communicate online?

PG Online resources have been developed for use with this scheme of learning.</td></tr>
<tr><td>Learning Aim C</td><td>1</td><td>Lesson 30:

C1 – Online systems
The personal and professional uses and applications of cloud storage.</td><td>Big Question:
What is the difference between cloud storage and cloud computing?

Pupils will understand the uses and implications of cloud storage</td><td>VPNs
remote desktop technologies</td><td>Lead-in: Through Q&A, establish learners' baseline understanding of 'cloud storage'. It is likely that knowledge and examples will relate to personal rather than professional use.
Group activity: In groups, learners discuss and conduct research on the uses and implications of cloud storage. Direct learners to make distinctions between personal and professional uses of the technology. See link on the implications of cloud computing in the resources column.
Class discussion: As a class, discuss findings and share ideas.</td><td>Computers with internet access for research.
Flipchart or similar for learners to record discussions and ideas.
Link for activity:
www.dmwgroup.com/implications-cloud-computing/
Homework x 2: Using online systems
https://www.knowitallninja.com/lessons/using-online-systems/</td></tr>
<tr><td></td><td>1</td><td>Lesson 31:
C1 Online systems
The personal and professional uses and applications of cloud computing.
The impact and implications on individuals of cloud computing and storage.</td><td>Big Question:
What is the difference between cloud storage and cloud computing?

All pupils will know the difference between cloud computing and cloud storage.</td><td>URL
Office 365 and OneDrive
Google Drive
iCloud</td><td>Lead-in: Through Q&A, check learners' understanding of the content from the previous lesson. Introduce the concept of cloud computing, highlighting the difference between cloud computing and cloud storage.
Individual activity: Give learners a task that requires the use of application software to meet a range of success criteria (such as creating, editing and</td><td>Task sheets and success criteria.
Computers with internet access.
Access to a cloud based service.
Suitable locally installed software</td></tr>
</table>

					exporting an image). Get half of the learners to perform the task using a cloud service and the other half using locally installed software. • **Paired activity:** Organise learners into pairs consisting of one learner that used the cloud service and one that used locally installed software. Learners should discuss the benefits and drawbacks of each of the platforms. • **Class discussion:** Allow groups to share their discussions with the wider group.	**Homework x 3 over 2 lessons: Online communities** https://www.knowitallninja.com/modules/online-communities/
	1 **1**	**Lesson 32:** **C1 – Online systems** The impact and implications on individuals of cloud computing and storage. The impact and implications on organisations of cloud computing and storage.	**Big Question:** What is the difference between cloud storage and cloud computing? **This is a recap lesson with exam style questions.**	security: -cost -ease of use -features -connectivity social media blog	• **Lead-in:** Introduce the purpose of the lesson, ie to reinforce learning from previous lessons and to practise exam technique. Explain the requirements of the keyword selected for the extended writing task. • **Individual activity:** In exam conditions, learners should respond to an extended writing, exam-style question on cloud computing and/or storage. Ensure that the question uses the command word 'discuss' or 'analyse'. • **Paired activity:** Allow learners to swap and discuss their responses and interpretation of the question. • **Individual activity:** Learners redraft/improve their responses based on their discussion. • **Lead-in:** Learners should identify and discuss types of 'online community' and the communication tools they offer.	• List of command words and meanings. • Exam-style question for task.

	1 2	**Lesson 33:** **C2 Online communities** Ways of communicating and interacting with online communities. The implications for individuals of using and accessing online communities. **Lesson 34:** **C2 Online communities** Ways of communicating and interacting with online communities. The implications for organisations of using and accessing online communities. **Lessons 35-36** **C1 – Online systems** **C2 - Online communities**	**Big Question:** What is an online community? **All pupils will be able to identify and discuss types of 'online community' and the communication tools they offer** **Big Question:** What is an online community? **All pupils will know how organisations interact using online communities**	microblog vlog wiki chatrooms instant messaging podcasts forums user experience ease of use performance, availability accessibility meeting needs cost privacy security employee and customer experience – ease of use, performance, availability, accessibility customer needs cost implementation – timescales, testing replacement or integration with current systems productivity working practices Security	Ensure that learners are aware of, and use, specific terms and not brand names. • **Group activity:** In groups, learners discuss and conduct research on the uses and implications of online communities for individuals • **Class discussion:** As a class, discuss findings and share ideas. • **Individual activity:** Homework task – learners to prepare questions to ask the guest speaker. • **Lead-in:** Introduce guest speaker and highlight to learners that in this lesson they will look at online communities used by organisations. • **Guest speaker:** A manager or technical support specialist from a local employer should visit the lesson to give a talk on the use of online communities by their organisation. Learners should make notes throughout. • **Class discussion:** Learners ask speaker prepared questions. • **Lead-in:** Through use of Q&A, check learners' understanding of topic C. Introduce the task that they will be focusing on this lesson. • **Individual activity:** Supply learners with a vocational scenario that requires them to analyse the ways in which online systems and online communities could be used to meet the needs of a given organisation and the implications of these technologies.	• Flipchart or similar for learners to record discussions and ideas. • Notepads and pens, computers and tablets for notetaking. • Scenario for task. Extract from specification to support learners during task.

		Topic C Assessment **Objectives**: Students will: • Apply their knowledge in answers to a range of questions • Be able to highlight areas of strength and any gaps in their understanding of this learning aim **The test has been designed to be printed and answered by hand.** Students should complete the Assessment Test (up to 1 hour). **Activities/Resources** To be developed in advance by the teacher responsible for the Learning Aim. Click here for previous exam papers for use when creating mocks				

Year 13 / Term 2

BTEC Level 3 Extended Certificate in Information Technology
Unit 1 – Information Technology Systems
Link to resources on the team's site.
Each lesson should take 1 period with some covering two. Leeway has been included at the end of each learning aim to make up for any time lost.
Important: To access the teacher lesson resources you must log into the teams site and for the quizzes, Know it all Ninja.

Specification o References	Periods	Topic Area: Main Items	Outcomes that students should be able to	Key Terms / Concepts (literacy)	Assessment	Resources
	9	**(4) Learning Aim D: Protecting data and information** **Big Questions:** **1. What is computer threat and what are their characteristics?** **2. What are the impact of threats to data, information and systems to an individual or to an organisation** **3. How can you prevent online threats?** **4. What is encryption?** **5. What is the main legislation and codes of practice for the protection of data?** **6. How do we protect our data?** **PG Online resources have been developed for use with this scheme of learning.**				
Learning Aim D	**1**	**Lesson 37:** **D1 Threats to data, information and systems** The characteristics of threats to data. The impact of threats to data, information and systems on individuals. **B3 Issues relating to transmission of data** Security issues and considerations when transmitting data over different connection types.	**Big Question** **What is computer threat and what are their characteristics?** **All pupils will know the impact of threats to data, information and systems on individuals.**	viruses and other malware hackers phishing	• **Lead-in:** As a class, learners thought shower the potential threats to data. Use Q&A to establish the level of learners' knowledge of how, where and why these threats occur. • **Independent learning activity:** Learners conduct research on the characteristics of different threats to data and the impact of this on individuals. • **Class discussion:** As a class, discuss findings and share ideas. • **Independent activity:** Learners should prepare questions for the guest speaker (lessons 42–43).	• Computers with internet access for research. **Homework: Implication of threats** https://www.knowitallninja.com/lessons/implication-of-threats/
	1	**Lesson 38:**		accidental damage	• **Lead-in:** Use Q&A to remind learners of topics covered last lesson.	

		D1 Threats to data, information and systems The characteristics of threats to data. The impact of threats to data, information and systems on organisations.	**Big Question:** **What are the impact of threats to data, information and systems to an individual or to an organisation** **All pupils will know the impact of threats to data, information and systems on individuals.**		• **Independent learning activity:** Learners conduct research on the impact of threats to data on organisations. See video link 'Cyber Security Threats: See them before they happen' in the resources column. • **Class discussion:** As a class, discuss findings and share ideas. **Independent activity:** Learners prepare questions for guest speaker (lessons 42–43).	• Computers with internet access for research. • Video link for activity: • Cyber Security www.youtube.com/watch?v=S2xMS4z7ngc
	2	**Lesson 39-40** **D1 Issues relating to transmission of data** Security issues and considerations when transmitting data over different connection types.	**Big Question** **3. How can you prevent online threats?** **All pupils will know how to protect for online threats**	Antivirus Router	• **Lead-in:** Use Q&A to test learners' understanding of threats to data. • **Individual activity 1:** Set learners a challenge to each find one feature, one characteristic and one implication of using antivirus software and/or firewalls. • **Class discussion:** Discuss the learners' findings and facilitate discussion to ensure that learners are aware of a range of features, characteristics and implications. • **Small group activity 1:** Organise the class into groups. Assign each group one of the techniques listed. As a group, they should prepare a short presentation highlighting the features and implications of their assigned technique. • **Small group activity 2:** Each group should take turns to present their findings to the rest of the class.	• Computers with internet access for research. • Flipchart or similar for learners to record discussions and ideas. • Presentation/screen sharing facilities.
		Lesson 41:		Encryption Transmission	• **Lead-in:** Supply learners with a message scrambled using a simple substitution	

	1	**D2 Protecting data** The features, applications and implications of encryption methods.	**Big Questions** **What is encryption?** **All pupils will know the features, applications and implications of encryption methods.**		cipher. Ask learners to decode the message using the key given to them. Use this activity as an introduction to the concept of encryption. • **Independent learning activity:** Learners to conduct research on data encryption that can be used to protect stored and transmitted data. See video links Encryption Part 1: Introduction to Encryption 1, 2 and 3 • **Class discussion:** As a class, discuss findings and share ideas. • **Independent activity:** Homework task – prepare questions on encryption for guest speaker/visit (lessons 42–43).	• Encryption starter activity. • Computers with internet access for research. • Video links for activity: Introduction to Encryption 1 www.youtube.com/watch?v=vCDe14NxSY0 Introduction to Encryption 2 www.youtube.com/watch?v=KEWGoXE6zMo Introduction to Encryption 3 www.youtube.com/watch?v=wZ9SnV6ySeM
	2	**Lesson 42-43** **D1 Threats to data, information and systems** **D2 Protecting data**	**Big Questions** **What is the main legislation and codes of practice for the protection of data?** **All pupils will know the legislation and codes of practice for the protection of data.**	Legislation: GDRP 2018 DPA 1998 CMA 1990 FIA 2000	• **Tutor presentation:** Give an introduction and overview of the legislation and codes of practice for the protection of data. • **Individual activity:** Learners make notes on legislation and codes of practice. Learners also prepare and refine questions for the guest speaker. • **Guest speaker:** A manager or technical support specialist from a local employer should visit the lesson to give a talk on the protection of data and the implications of threats. • **Class discussion**: Learners ask the speaker their prepared questions and take notes, as appropriate.	• Computers with internet access for research. Notepads and pens, computers and tablets for notetaking. **Homework x 2: Protecting data techniques and tools** https://www.knowitallninja.com/lessons/protecting-data-techniques/

	1	**Lesson 44:** **D1 Threats to data, information and systems** **D2 Protecting data**	**Big Question** **How do we protect our data?**		• **Lead-in:** Hold a brief Q&A session on protecting data and systems. Remind learners of the meaning of different command words. • **Individual activity:** Give learners a set of exam-style questions set in a vocational scenario that focuses on topic D.	https://www.knowitallninja.com/lessons/protecting-data-tools/ • List of command words and meanings • Exam-style question for task.
		Topic D Assessment Topic D Assessment **Objectives**: Students will: • Apply their knowledge in answers to a range of questions • Be able to highlight areas of strength and any gaps in their understanding of this learning aim **The test has been designed to be printed and answered by hand.** Students should complete the Assessment Test (up to 1 hour). **Activities/Resources** To be developed in advance by the teacher responsible for the Learning Aim. Click here for previous exam papers for use when creating mocks				
		(5) Learning Aim E: Impact of IT systems **Big Questions:** 1. How do online services meet the needs of individuals and organisations? 2. What are the features and implications of IT systems used by organisations for stock control? 3. How can system automate data and data processes? 4. What are the implications of using IT systems for both individuals and organisations? 5. How can we be sure that data is accurate and reliable? 6. How is data extracted and sorted? 7. How is data processed?				

		PG Online resources have been developed for use with this scheme of learning.				
Learning Aim E	**1**	**Lesson 45-48** **E1 Online services** The features and implications of using online services. The uses, impact and implications for individuals and organisations of: • transactional data • targeted marketing.	**Big Question:** How do online services meet the needs of individuals and organisations? **All pupils will know how online services meet the needs of individuals and organisations**	Features -retail -financial services -education and training -news and information -entertainment and leisure -productivity -booking systems.	• **Lead-in:** Introduce the activity and give an overview of the range of areas learners should consider when investigating online services. • **Individual activity:** Based on research, learners should present a detailed, formal written report on how online services in the listed areas meet the needs of individuals and organisations and the associated implications. This could include retail, financial services (financial advisers), education, entertainment and leisure and booking systems (eg health) – see links in the resources column.	• Computers with internet access for research. • Links for activity: Retail www.nibusinessinfo.co.uk/content/advantages-and-disadvantages-online-retail Financial services www.bankhall.co.uk/ Education www.educate.co.uk/ Entertainment www.thecloud.net/wifi/case-studies/entertainment-and-leisure/ Booking systems https://patient.emisaccess.co.uk/account/login
	1	**Lesson 49:** **E2 Impact on organisations** The features and implications of IT systems used by organisations for: • stock control.	**Big Question:** What are the features and implications of IT systems used by organisations for stock control? **All pupils will know the features and implications of IT systems used by organisations for stock control**	Stock	• **Lead-in:** Introduce lesson and give a brief overview of stock control systems. • **Independent learning activity:** Learners conduct research on the features and implications of stock control systems including uses and system components. • **Class discussion:** As a class, discuss findings and share ideas.	• Computers with internet access for research. **Homework: Features of IT systems 1** https://www.knowitallninja.com/lessons/features-of-it-systems-1/

	1 1 1 2	**Lesson 50:** **E2 Impact on organisations** The features and implications of IT systems used by organisations for: • data logging • data analysis. Lesson 51: **E2 Impact on organisations** The features and implications of IT systems used by organisations for: • general office tasks • creative tasks. **Lesson 52:** **E2 Impact on organisations** The features and implications of IT systems used by organisations for: • advertising	**Big Question:** How can system automate data and data processes? **All pupils will know the features and implications of IT systems used by organisations for data logging and data analysis.** **Big Question:** What are the implications of using IT systems for both individuals and organisations? **All pupils will know the features and implications of IT systems used by organisations for general office and creative tasks.** **Big Question:** What are the implications of using IT systems for both individuals and organisations? **All pupils will know the features and implications of IT systems used by organisations for advertising.**	Logging Analysis CAD QR Codes Viral Phishing Social Engineering	• **Lead-in:** Introduce lesson and give a brief overview of data logging and data analysis systems. • **Independent learning activity:** Learners conduct research into the features and implications of data logging and analysis systems, including uses and system components. • **Class discussion:** As a class, discuss findings and share ideas. • **Lead-in:** Introduce lesson and give a brief overview of IT systems for office and creative tasks. • **Independent learning activity:** Learners to conduct research on the features and implications to organisations of systems used for office and creative tasks. • **Class discussion:** As a class, discuss findings and share ideas. • **Lead-in:** Introduce lesson and give a brief overview of IT systems used for advertising. • **Independent learning activity:** Learners to conduct research on the features and implications for organisations of using IT systems for advertising. See link on advertising agency software products in the resources column. • **Class discussion:** As a class, discuss findings and share ideas.	• Computers with internet access for research. • Computers with internet access for research. • Computers with internet access for research. • Link for activity: www.capterra.com/advertising-agency-software/

	3	**Lessons 53-54:** **E2 Impact on organisations** The features and implications of IT systems used by organisations for: • manufacturing.	**Big Question:** What are the implications of using IT systems for both individuals and organisations? **All pupils will know the features and implications of IT systems used by organisations for manufacturing**	Process	• **Tutor presentation:** Give an overview of systems used in manufacturing and facilitate discussion regarding the impact of these systems. • **Independent activity**: Prepare questions and notes on areas of further interest/study for planned visit. • **Visit:** Learners to visit a local employer to investigate the use of IT systems in manufacturing and related business processes.	• Notepads and pens, computers and tablets for notetaking. **Homework: Features of IT systems 2** **https://www.knowitallninja.com/lessons/features-systems-2/**
	3	**Lesson 55-57:** **E2 Impact on organisations** The features and implications of IT systems used by organisations. The impact and implications for organisations of IT systems	**Big Question:** What are the implications of using IT systems for both individuals and organisations? **All pupils will be able to analyse the ways in which IT systems could be used to meet the needs of a given organisation and the implications of these systems**	Security CCTV	• **Knowledge quiz:** Hold an informal quiz on the features of IT systems used by organisations. • **Tutor presentation:** Remind learners of the requirements of exam command words. • **Individual activity 1**: Supply learners with a set of short exam-style questions set in a vocational scenario that focuses on topic E2. • **Individual activity 2:** Supply learners with vocational scenarios that require them to analyse the ways in which IT systems could be used to meet the needs of a given organisation and the implications of these systems.	• List of command words and meanings. • Exam-style questions for task. • Case studies for task Specification extract (E2.2). **Homework: Impact of IT Systems** https://www.knowitallninja.com/lessons/impact-of-it-systems/
	2	**Lesson 58:** **E3 Using and manipulating data**	**Big Question:** How can we be sure that data is accurate and reliable?	-Primary -Secondary.	• **Lead-in:** Introduce the lesson by defining primary and secondary sources of data.	• Computers with internet access for research.

		Sources of data. Judging and ensuring reliability of data.	**All pupil will be able to judge and ensure the reliability of data.**		• **Small group activity:** In pairs or small groups, learners thought shower sources of secondary and primary data. See links on understanding primary and secondary data, data collection: building a valid and reliable data collection plan and validity and reliability in surveys in the resources column. • **Class discussion:** Learners share and discuss their ideas. • **Small group activity:** Learners research and make notes on ways of judging and ensuring the reliability of data from each of the identified sources.	• Flipchart or similar for learners to record discussions and ideas. • Links for activity: Primary and Secondary Sources www.youtube.com/watch?v=pmno-Yfetd8 Data collection www.ascd.org/publications/books/100047/chapters/Data-Collection@-Building-a-Valid-and-Reliable-Data-Collection-Plan.aspx Validity and reliability in surveys www.relevantinsights.com/validity-and-reliability#sthash.DDIln4X4.dpbs
	1	**Lesson 59:** **E3 Using and manipulating data** The characteristics and implications of methods of collecting data.	**Big Question:** How can we be sure that data is accurate and reliable? **All pupils will know the characteristics and implications of methods of collecting data.**	-survey -questionnaire -focus groups -interview.	• **Lead-in:** Introduce lesson and give a brief overview of methods of collecting data, as listed in the specification. **Independent learning activity:** Learners conduct research on the features and implications of each collection method. See video link on primary and secondary data in the resources column. • **Knowledge quiz:** Hold an informal quiz about features, benefits and drawbacks of different collection methods.	• Video link for activity: www.youtube.com/watch?v=59lk5kGhGII **Homework: Data sources** https://www.knowitallninja.com/lessons/data-sources/

	1	**Lesson 60:** **E3 Using and manipulating data** Reasons for ensuring data accuracy. Methods of ensuring data accuracy.	**Big Question:** How can we be sure that data is accurate and reliable? **All pupils will know the reasons and methods for ensuring data accuracy.**	Verification Validation.	• **Lead-in:** Start with a practical activity. Give learners a spreadsheet or simple flat file database containing a series of different fields. Ensure that some fields have validation and others do not. Some validation should have appropriate error messages. Learners should enter data from the test plan or list, and record what happens. See link with tips for avoiding data entry errors in Excel in the resources column. • **Class discussion:** Discuss what happened when the data was entered. Explore why only some fields behaved as expected. Discuss the implications of using/not using data validation. • **Small group task:** In pairs or small groups, learners analyse a series of common vocational scenarios to explore how data validation could be used and the relevant implications. • **Tutor presentation:** Introduce and explain the concept of data verification. • **Individual learning activity:** Learners should make notes on methods and implications of data verification.	• Spreadsheet/database for starter. • Link for starter: www.techrepublic.com/blog/five-apps/five-tips-for-avoiding-data-entry-errors-in-excel/ • List of test data/test plan. • Scenarios for tasks. • Computers with internet access for research.
	3	**Lessons 61-63:** **E3 Using and manipulating data** Methods of extracting and sorting data. Numerical and data modelling. Presenting data and results.	**Big Question:** How is data extracted and sorted? **All pupils will be able to use a range of methods to extract and sort data.**	Sort Query Filter Present Charts/graphs	• **Lead-in:** Introduce the concept of using spreadsheets as a numerical data modelling tool. • **Individual learning activities:** Learners should complete a series of practical tasks using a spreadsheet to: ○ sort and extract data ○ model 'what if' scenarios ○ present data and results.	• Spreadsheet modelling software. Scenario and task sheets.

					• **Class discussions:** Use class and small group discussion to explore how these tools can be used by individuals and organisations and the implications of their use.	
	3	**Lessons 64-66:** **E3 Using and manipulating data** Methods of extracting and sorting data. Numerical and data modelling. Presenting data and results.	**Big Question:** How is data extracted and sorted? **All pupils will be able to use a range of methods to extract and sort data.**	Sort Query Filter Present Charts/graphs	• **Lead-in:** Introduce the concept of using databases as a numerical data modelling tool. • **Individual learning activities:** Learners complete a series of practical tasks using a database to: ○ sort and extract data ○ model 'what if' scenarios ○ present data and results. • **Class discussions:** Use class and small group discussion to explore how these tools can be used by individuals and organisations and the implications of their use.	• Database software. Scenario and task sheets. **Homework: Processing and presenting data** https://www.knowitallninja.com/lessons/processing-presenting-data/
	3	**Lessons 67-69:** **E3 Using and manipulating data** The characteristics of user interfaces for data collection and processing	**Big Question:** How is data processed? **All pupils will know the characteristics of user interfaces for data collection and processing**	ease of use -accessibility -error reduction -intuitiveness -functionality -performance -compatibility	• **Lead-in:** Supply learners with examples of user interfaces (UIs) used to capture data (database forms, questionnaires, surveys, etc). Learners should identify uses of the characteristics listed in the specification. • **Individual learning activity 1:** Learners should carry out independent research into accessibility features and their application in UIs for data collection systems. • **Individual learning activity 2:** Learners design and create UIs for data capture systems using a range of different tools	Scenario and task sheets. **Homework: Data collection and user interfaces** https://www.knowitallninja.com/lessons/data-collection-user-interfaces/

	2	**Lesson 70-71:** **E3 Using and manipulating data**			(eg database and spreadsheet forms and online survey tools). • **Class discussion(s):** Use class and small group discussion to explore how these tools can be used by individuals and organisations and the implications of their use. • **Knowledge quiz:** Hold an informal quiz on the key points covered in lessons 55–57. • **Tutor presentation:** Remind learners of the requirements of exam command words. • **Individual activity 1:** Give learners a set of short exam-style questions that are set in a vocational scenario that focuses on topic E3. • **Individual activity 2:** Give learners vocational scenarios that require them to analyse how data manipulation and capture tools could be used to meet the needs of a given organisation or individual and the implications of these systems.	• List of command words and meanings. • Exam-style questions for task. • Case studies for task.
		Topic E Assessment **Objectives**: Students will: • Apply their knowledge in answers to a range of questions • Be able to highlight areas of strength and any gaps in their understanding of this learning aim **The test has been designed to be printed and answered by hand.** Students should complete the Assessment Test (up to 1 hour). **Activities/Resources** To be developed in advance by the teacher responsible for the Learning Aim. Click here for previous exam papers for use when creating mocks				
		(6) Learning Aim F: Issues				

		Big Questions: **1. What are the moral and ethical factors relating to the use of information technology?** **2. What are the environmental implications of using IT?** **3. What are the legal implications are in place for using IT systems?** **4. What are the moral and ethical implications of using IT?** **5. What are current legislation designed to ensure the accessibility of IT systems**				
Learning Aim F	**2**	**Lesson 72-73** **F1 Moral and ethical issues** The moral and ethical factors of the use of information technology. Privacy. Freedom of speech and censorship.	**Big Question** **What are the moral and ethical factors relating to the use of information technology?** **All pupils will the main moral and ethical factors of the use of information technology.**	Moral Ethical	• **Small group activity:** Learners thought shower the factors to consider relating to privacy for individuals and organisations. • **Class discussion:** Clarify relevant areas relating to privacy. • **Individual activity:** Learners should produce a written response explaining the implications of privacy for individual and organisational use of IT systems. • **Class discussion:** Explore the issues of freedom of speech and censorship.	• Computers with internet access for research. **Homework: Moral and ethical factors 1** https://www.knowitallninja.com/lessons/moral-ethical-factors-1/
	2	**Lessons 74-75:** **F1 Moral and ethical issues** The moral and ethical factors of the use of information technology. Environmental.	**Big Question** **What are the environmental implications of using IT?** **All pupils will the environmental moral and ethical factors of the use of information technology.**	Natural resources Immoral	• **Small group activity:** Learners thought shower the environmental factors to consider relating to use of IT systems. • **Individual activity 1:** Learners should conduct individual research into the environmental factors related to the use of IT systems (eg effects or ways of reducing the impact). See link: Information Systems and the Environment: Overview and Perspectives in the resources column. • **Individual activity 2:** Supply learners with a set of short exam-style questions set in a vocational scenario that focuses on environmental issues.	• Computers with internet access for research. • Exam-style questions. • Link for activity 1: www.nap.edu/read/6322/chapter/2

	2	**Lesson 76:** **F1 Moral and ethical issues** The moral and ethical factors of the use of information technology. Unequal access to information technology.	**Big Question** **What are the legal implications are in place for using IT systems?** **All pupils will the unequal access to information technology, moral and ethical factors of the use of information technology.**	Digital divide	• **Lead-in:** Introduce the concept of unequal access. Using Q&A and class discussion, explore some of the causes of unequal access. • **Small group activity:** In pairs or small groups, learners should discuss and research the impacts (locally and globally) of unequal access to IT systems. See link on unequal access in the resources section. • **Class discussion:** As a class, discuss findings and share ideas.	• Computers with internet access for research • Link for activity: https://09obioraha.wordpress.com/tag/unequal-access/
	1	**Lesson 77:** **F1 Moral and ethical issues** The moral and ethical factors of the use of information technology. Online behaviour and net etiquette.	**Big Question** **What are the moral and ethical implications of using IT?** **All pupils will understand the implications (for individuals and organisations) of issues relating to online behaviour**	Netiquette	• **Lead-in:** Continue the concept of unequal access. Use Q&A and class discussion to explore ideas and experiences. **Small group activity:** In pairs or small groups, learners should discuss and make notes on the implications (for individuals and organisations) of issues relating to online behaviour. See links on 'Bad behaviour online: Bullying, trolling and free speech' and 'Netiquette: Rules of behaviour on the internet' in the resources section. • **Class discussion:** As a class, discuss findings and share ideas.	• Computers with internet access for research. • Flipchart or similar for learners to record discussions and ideas. • Links for activity: Bad behaviour online www.youtube.com/watch?v=RVSAFhTjAdc Netiquette www.education.com/reference/article/netiquette-rules-behavior-internet/
	1	**Lesson 78:**	**Big Question**	Interconnected Awareness of:	• **Lead-in:** Introduce the concept of globalisation. Using Q&A and class	• Computers with internet access for research.

		F1 Moral and ethical issues The moral and ethical factors of the use of information technology. Globalisation.	**What are current legislation designed to ensure the accessibility of IT systems**	Multicultural Economic situations	discussion, explore ideas and experiences. • **Individual learning activity:** Learners should investigate the implications (for individuals and organisations) of issues relating to globalisation. See video link: How globalisation and IT have reshaped the world in the resources section. • **Plenary:** Supply learners with a series of short exam-style questions relating to globalisation.	• Exam-style questions. • Video link for activity: www.youtube.com/watch?v=PPjdQeRvGMw **Homework: Moral and ethical factors 2** https://www.knowitallninja.com/lessons/moral-ethical-factors-2/
	1	**Lesson 79:** **F1 Moral and ethical issues** The moral and ethical factors of the use of information technology. Acceptable use.		Policy	• **Lead-in:** Supply learners with examples of acceptable use policies from a range of organisations. In small groups, learners should explore commonalities between the examples. • **Group activity:** In groups, learners should explore how and why acceptable use policies are used and the implications for individuals and organisations of using them (or not). See the link to a sample acceptable use policy in the resources column. • **Class discussion:** As a class, discuss findings and share ideas.	• Examples of acceptable use policies. • Flipchart or similar for learners to record discussions and ideas. • Link for activity: www.getsafeonline.org/themes/site_themes/getsafeonline/download_centre/Sample_Acceptable_Usage_Policy.pdf
	1	**Lesson 80:** **F2 Legal issues** The role of current legislation in protecting users and their data from attack and misuse – Computer Misuse Act 1990. The role of current legislation in protecting users and their		Laws Misuse	• **Lead-in:** Introduce the lesson, by giving an overview of the Computer Misuse Act. • **Individual learning activity:** Learners should investigate the areas covered by the Computer Misuse Act and the potential sanctions for breaching the terms of the act. They should produce a written summary of their findings. See	• Computers with internet access for research. • Link for activity: www.legislation.gov.uk/ukpga/1990/18/contents

		data from attack and misuse – Police and Justice Act 2015 (computer misuse).			link to Computer Misuse Act 1990 in the resources column. • **Class discussion:** As a class discuss, findings and share ideas.	**Homework: Data and user protection legislation** https://www.knowitallninja.com/lessons/data-user-protection-legislation/
	1	**Lesson 81:** **F2 Legal issues** The role of current legislation in protecting users and their data from attack and misuse – Copyright designs and patents act 1988. The role of current legislation in protecting users and their data from attack and misuse – The Copyright (computer programs) regulations.		Copyright Patent	• **Lead-in:** Introduce the lesson by giving a brief overview of the Copyright Design and Patents Act 1988. **Group activity:** In groups, learners should explore the details of the act and the implications, for individuals and organisations. Each group should support their notes with at least one real life example of the act being breached by an IT system user. See link to Computer Misuse Act 1990 legal cases in the resources column. **Class discussion:** As a class, summarise the key points of the act and share examples.	• Computers with internet access for research. • Link for activity: www.computerevidence.co.uk/Cases/CMA.htm
	1	**Lesson 82:** **F2 Legal issues** The role of current legislation in protecting users and their data from attack and misuse – The health and safety (display screen equipment) regulations 1992.		RSI Ergonomics	• **Lead-in**: Introduce the lesson by giving an overview of the Copyright Design and Patents Act 1988. • **Individual learning activity:** Learners should investigate and produce a written summary of the areas covered by the health and safety (display screen equipment) regulations and the implications for individuals and organisations of having to follow them (eg what equipment is needed etc). See the link to guidance and regulations for working with display screen equipment in the resources column.	• Computers with internet access for research. • Link for activity: www.hse.gov.uk/msd/dse/guidance.htm

	1	**Lesson 83:** **F2 Legal issues** The role of current legislation in protecting users and their data from attack and misuse – The Data Protection Act.		GDRP Protection of data	• **Class discussion:** As a class, discuss findings and share ideas. • **Lead-in:** Introduce the lesson by giving a brief overview of the Data Protection Act. • **Group activity:** In groups, learners should investigate and summarise the main 'eight principles' of the act and how these would impact on an organisation. Each group should support their notes with at least one real life example of the act being breached by an organisation detailing what the organisation did, the sanctions that were applied and what the company should do in future. See link to the Data Protection act in the resources column. • **Class discussion:** As a class, summarise the key points of the act and share examples.	• Computers with internet access for research. • Link for activity: www.gov.uk/data-protection/the-data-protection-act **GDPR** has superseded this.
	1	**Lesson 84:** **F2 Legal issues** Guidelines and current legislation designed to ensure the accessibility of IT systems.		WCAG W3C Disability Discrimination Act 1995 and 2005 Equality Act 2010 BSI OAF	• **Lead-in**: Introduce the lesson discussing the idea of, and the need for, accessibility features in IT systems. • **Individual learning activity:** Learners investigate and summarise the key points of each of the guidelines and legislation listed in the specification. See link on Disability Discrimination Act (DDA) and web accessibility in the resources column. • **Individual activity:** Homework task – learners to plan questions for guest speaker.	• Computers with internet access for research. • Link for activity: www.webcredible.com/blog/disability-discrimination-act-dda-web-accessibility/ **Homework: Accessibility and legislation guidelines**

	1 2	**Lesson 85:** **F2 Legal issues** Guidelines and current legislation designed to ensure the accessibility of IT systems. **Lessons 86-87** **F1 Moral and ethical issues** **F2 Legal issues**		WCAG W3C Disability Discrimination Act 1995 and 2005 Equality Act 2010 BSI OAF	• **Lead-in:** Use Q&A to remind learners of topics covered relating to moral and legal issues. • **Guest speaker:** A digital designer/software developer to give a talk on the use of accessibility features in digital products and IT systems. • **Class discussion**: Learners ask prepared questions. • **Knowledge quiz:** Hold an informal quiz on the key points covered – topic F. • **Tutor presentation:** Remind learners of requirements of exam command words. • **Individual activity 1:** Supply learners with a set of short exam-style questions set in a vocational scenario that focus on topics F1 and F2. **Individual activity 2:** Supply learners with vocational scenarios that require them to analyse the relevant legal, moral and ethical issues.	https://www.knowitallninja.com/lessons/accessibility-legislation-guidelines/ Notepads and pens, computers and tablets for notetaking. • List of command words and meanings. • Exam-style questions for task. • Case studies for task. Specification extracts (F2.1 & F2.3).
		Topic F Assessment **Objectives**: Students will: • Apply their knowledge in answers to a range of questions				

		• Be able to highlight areas of strength and any gaps in their understanding of this learning aim **The test has been designed to be printed and answered by hand.** Students should complete the Assessment Test (up to 1 hour). **Activities/Resources** To be developed in advance by the teacher responsible for the Learning Aim. Click here for previous exam papers for use when creating mocks				
		(7) All topics exam revision leading into term 3 and the exam				
Learning Aim F	**2**	**Lesson 88-89** **Whole Unit 1 specification**		**See above for keywords.**	• **Lead-in:** Introduce the purpose of the lessons: to look at the SAMs. • **Tutor presentation:** Explain the structure of the paper. Reiterate the meaning of different command words. • **Individual tasks:** Learners should work through the paper in exam conditions.	• Sample assessment materials (SAMs).
	2	**Lessons 90-91:** **Whole Unit 1 specification**			• **Lead-in:** Introduce the purpose of the lessons: to identify areas of improvement informal exam settings. • **Class/small group activities:** Learners should work through their responses, either in a class activity led by the tutor or in small groups using the mark scheme facilitated by the tutor. Learners should explore where they have not achieved as well and look at how to improve their responses.	• SAMs. • SAM mark schemes. List of command words and meanings.
	5	**Lessons 92-96:** **Whole Unit 1 specification**			• **Lead-in:** Introduce the purpose of the lessons: to be able to plan IT systems to meet specific needs. • **Individual activity 1:** Learners respond to a series of vocational scenarios by planning a system to meet identified needs. System to be presented as an annotated system diagram.	Scenarios for tasks

					• **Individual activity 2:** Learners produce a written justification of their proposed system. • **Group activity:** Learners discuss their solutions, share ideas and improve the appropriateness of their system.	
	5	**Lessons 97-101:** **Whole Unit 1 specification**			• **Lead-in:** Introduce the purpose of the lessons: to look at how to improve performance on the short and medium response exam questions. • **Tutor presentation:** Reiterate the meaning of different command words. For each of the command words, look at examples of response structures from published mark schemes and/or highlight points form the Lead Examiner reports (if available). • **Individual tasks:** Give learners example questions from either the SAMs or past papers, or ones that the tutor has prepared. Allow them to respond to these in exam conditions. Tutors could supply example responses that learners could critique.	• Example questions. • Example mark schemes. • Example responses. • Lead Examiner reports.
	9	**Lessons 102-110:** **Whole Unit 1 specification**			• **Lead-in:** Introduce the purpose of the lessons: to look at how to improve performance on the extended writing questions. • **Tutor presentation:** Reiterate the meaning of different command words. For each of the 'extended writing' command words, look at the structure of the level-based mark schemes and what the descriptors mean. • **Individual tasks:** Give learners example extended questions from either the	• Example extended questions. • Level-based mark schemes. • Example responses.

					SAMs or past papers, or ones that the tutor has prepared. Allow them to respond to these in exam conditions. Tutors could supply example responses that learners could critique. • **Small group tasks:** Learners should discuss/share their interpretations of the questions. They could do a peer-marking activity.	
	6	**Lessons 111-116:** **Whole Unit 1 specification**			• **Lead-in:** Introduce the purpose of the lessons: to allow learners to work on areas of the specification they find challenging. Ask them to look through the specification (and their work from the last few lessons) and identify where they think they need additional focus. • **Tasks:** Supply 'stations' in different areas of the room that learners can use, based on their areas of weakness.	• Example questions. • Example mark schemes. • Example responses. Specifications.