

Cambridge TECHNICALS LEVEL 3

IT

Cambridge
TECHNICALS
2016

Support for Teaching and Learning of Unit 1
Fundamentals of IT

Version 1

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INTRODUCTION

This resource has been designed for you to support your learners with accessing the content requirements of Unit 1.

There are five LO maps, each one providing additional clarity on the knowledge, understanding and deeper understanding that is required for each assessment criterion.

The maps build on the information contained in the Delivery Guide but provide additional amplification on the depth of teaching that is required as well as some further suggestions for teaching activities and resources that will help you with content delivery with your learners.

The LO maps demonstrate that a deeper understanding is not required in relation to every area of teaching content. Much of the unit requires learners to focus on the characteristics, features, purpose and use of different areas of IT will be assessed on a regular basis during the course of external assessments. Where any deeper understanding is required it is often where the learner is expected to justify their acquired IT knowledge within a particular context and this has been flagged up in the maps accordingly.

Unit 1 Fundamentals of IT	
LO1	Understand computer hardware
LO2	Understand computer software
LO3	Understand business IT systems
LO4	Understand employability and communication skills used in an IT environment
LO5	Understand ethical and operational issues and threats to computer systems

To find out more about this qualification please go to:

<https://www.ocr.org.uk/qualifications/vocational-education-and-skills/cambridge-technicals-it-level-3-certificate-extended-certificate-introductory-diploma-foundation-diploma-diploma-05838-05842-2016-suite/>

LO1 – UNDERSTAND COMPUTER HARDWARE

Assessment Criterion	KNOWLEDGE OF:	UNDERSTANDING OF:	DEEPER UNDERSTANDING OF:
1.1	Input, output and communication devices	How these different devices are used	The benefits/limitations of these devices
Suggested learning activities	<p>Learners could be shown or provided with a list of the different input and output devices and asked to research what they are in small groups and produce a presentation where they identify and describe each one.</p> <p>Learners could participate in a group discussion where initially they are asked to identify different communication devices. They could be asked to provide descriptions of the communication devices as homework.</p>	<p>Learners could be asked to produce an information guide where they provide explanations of the uses of the different input devices identified during previous activity. This could be followed on by a group discussion where the learners are provided with different contexts and are asked to explain which input devices could be used for each of the contexts.</p> <p>The learners could then work in smaller groups and carry out a similar activity for the output devices and prepare a presentation to deliver to the rest of the group.</p> <p>For communication devices, learners could be provided with a range of different contexts and asked to explain which communication devices would be used.</p>	<p>Learners could create a table where they select the input, output and communication devices previously addressed during previous activity and then research the benefits and limitations for each device.</p> <p>Once the table is completed, they could then be given scenarios for different types and sizes of organisations and select which devices would be most appropriate and then justify the choices they have made.</p>
Useful links	<p>https://www.lifewire.com/computer-hardware-2625895</p> <p>https://www.computerhope.com/jargon/c/communication-devices.htm</p>	<p>https://www.brainscape.com/flashcards/input-devices-advantages-and-disadvantage-5772994/packs/8784517</p> <p>https://www.brainscape.com/flashcards/output-devices-advantages-and-disadvantage-5775570/packs/8784517</p>	<p>https://www.ictlounge.com/html/manual_input_devices.htm</p> <p>https://www.brainscape.com/flashcards/output-devices-advantages-and-disadvantage-5775570/packs/8784517</p>
1.2	Component parts of a computer system	The characteristics/purpose of these components	
Suggested learning activities	<p>Learners could work in small groups and each group given a particular component to research.</p> <p>The learners could research the given component and create a table where they identify and describe the components.</p>	<p>Learners could be asked to expand on the tables created to include the characteristics and purpose for each of the components.</p> <p>This will provide them with a resource which they could use for revision purposes.</p> <p>The scenarios used for the computer hardware section could then be used again for the learners to identify which components would be relevant to the different types of organisations and explain the purpose of each of the selections they have made.</p>	

Assessment Criterion	KNOWLEDGE OF:	UNDERSTANDING OF:	DEEPER UNDERSTANDING OF:
Useful links	http://ccri.edu/ https://www.pcworld.com/article/221559/cpu.html http://smallbusiness.chron.com/characteristics-motherboard-66917.html https://www.ccexpert.us/operating-systems/identify-the-names-purposes-and-characteristics-of-motherboards.html https://study.com/academy/lesson/data-storage-devices-definition-types.html http://www.ftms.edu.my/images/Document/CSCA0101%20-%20Computing%20Basics/csca0101_ch05.pdf https://www.electronicshub.org/types-of-computer-ports/ http://skillonpage.com/types-of-computer-ports-and-their-functions/ https://computer.howstuffworks.com/computer-memory2.htm http://www.certiology.com/comptia-certification/comptia-aplus/free-comptia-aplus-study-guide/expansion-cards.html	https://www.techwalla.com/articles/different-parts-of-the-computer-and-their-function http://www.contentedwriter.com/function-of-computer-hardware-components/	
1.3	Types of computer system	The uses of different types of computer system	The benefits/limitations of each type of computer system
Suggested Learning activities	<p>Through a class discussion, encourage learners to identify different types of computer systems. Ask them to describe each of the systems they have identified.</p> <p>From the list required, fill in the gaps by describing the different computer systems they have not thought about (e.g. mainframe, quantum, embedded).</p>	Learners could work in small groups to prepare a presentation explaining the use of the different computer systems.	The explanations should also include the benefits and limitations of each of the computer systems.
Useful links	https://study.com/academy/lesson/types-of-computer-systems-in-business.html http://www.newtechnologysite.com/computers/types.html http://www.chtips.com/computer-fundamentals/different-types-of-computer-system	http://www.newtechnologysite.com/computers/types.html https://www.slideshare.net/Fraserrr/the-purposes-of-different-types-of-computer-systems-14586202 http://www.bbc.co.uk/bitesize/intermediate2/computing/	

Assessment Criterion	KNOWLEDGE OF:	UNDERSTANDING OF:	DEEPER UNDERSTANDING OF:
1.4	Connectivity methods	The characteristics and purpose of different connectivity methods	Use in different contexts
Suggested Learning Activities	Provide the learners with a table which includes all of the connectivity methods. Ask the learners to provide a description of each of the connectivity methods.	Through a class discussion, learners could be asked to review their notes from the previous session and discuss the characteristics and purpose of each type of connectivity method. The learners could then revisit the previous scenarios and identify which of the connectivity methods could be used and their purpose.	By developing this knowledge and understanding of the characteristics and purpose of connectivity methods learners should be able to justify different methods within a given context.
Useful links	https://www.comstar.biz/different-types-of-internet-connections/ https://smallbiztrends.com/2015/08/fiber-optic-copper-wireless-internet-transmission-methods.html https://www.bbc.co.uk/education/guides/zp9jpv4/revision/3	http://www.steves-internet-guide.com/connect-methods/ https://www.makeuseof.com/tag/types-of-internet-access-technologies-explained-and-what-you-should-expect/	
1.5	Different types of communications hardware	The characteristics, purpose and use of this communications hardware	
Suggested Learning activities	Learners could be given two sets of flash cards, one with the name of the communication hardware, the second with a description of each of the types of communication hardware. They could then work in groups to match the communication hardware with the description.	Learners could be given a further set of flash cards with the characteristics of each and again asked to match them up. Learners could be asked to produce an information guide where for each type of communication hardware, they provide an explanation for their purpose/use and include an explanation of the difference between a hybrid and a combined device.	
Useful links	https://fossbytes.com/networking-devices-and-hardware-types/ http://www.excitingip.com/53/types-and-features-of-wireless-access-points/ https://www.bbc.co.uk/education/guides/zh4whyc/revision/5 https://www.ictlounge.com/html/network-hardware.htm	https://www.igcseict.info/theory/4/hware/ http://www.certiology.com/computing/computer-networking/network-devices.html	

Assessment Criterion	KNOWLEDGE OF:	UNDERSTANDING OF:	DEEPER UNDERSTANDING OF:
1.6	The process needed to troubleshoot common hardware problems as well as the documentation involved.		
Suggested Learning activities	<p>In small groups, ask the learners to list some hardware faults that they have come across or know of.</p> <p>Ask each group to share their ideas in order to develop a comprehensive list. Ask the learners to include a description for each of the faults.</p> <p>The learners can then research different troubleshooting tools available and identify what each one would be used for and describe how it works.</p> <p>In a class discussion, they could look at the list of faults and identify which of the troubleshooting tools could be used to troubleshoot each of the faults.</p> <p>Provide the learners with an example of how the identifying and troubleshooting of faults could be documented.</p> <p>Learners could be asked to draw a flow chart of the troubleshooting process.</p>		
Useful links	<p>https://www.howtogeek.com/174068/how-to-identify-which-hardware-component-is-failing-in-your-computer/</p> <p>https://www.computerhope.com/issues/ch001088.htm</p> <p>https://www.maketecheasier.com/detect-computer-hardware-problems/</p> <p>http://www.linuxecum.com/Hardware/hwPrbSolving.php</p> <p>https://www.techsupportall.com/10-best-computer-diagnostic-tools-technicians/</p>		

Assessment Criterion	KNOWLEDGE OF:	UNDERSTANDING OF:	DEEPER UNDERSTANDING OF:
1.7/1.8/1.9	Number systems and units of measurement	How to convert between the different number systems	
Suggested Learning activities	<p>Learner should be provided with examples of the different number systems and units of measurement.</p> <p>The learners could be asked to discuss the different sizes and then put into teams where they participate in a quiz. Questions could include e.g.:</p> <ul style="list-style-type: none"> • Which is the largest, a bit or a byte? • Is a kibibyte metric or binary? • What is the difference in size between a Megabyte and a Mebibyte? 	Learners could be given a series of activities where they convert between the different numbering systems.	
Useful links	<p>http://www.teach-ict.com/gcse_new/computer%20systems/storage_units/miniweb/pg2.htm</p> <p>https://learn.sparkfun.com/tutorials/binary/bits-nibbles-and-bytes</p> <p>http://www.gordonengland.co.uk/conversion/binary.htm</p> <p>https://www.makeuseof.com/tag/memory-sizes-gigabytes-terabytes-petabytes/</p> <p>https://techterms.com/category/bits_and_bytes</p>	<p>https://www.mathsisfun.com/binary-number-system.html</p> <p>https://www.electronics-tutorials.ws/binary/bin_2.html</p> <p>https://code.tutsplus.com/articles/number-systems-an-introduction-to-binary-hexadecimal-and-more--active-10848</p>	

LO2 – UNDERSTAND COMPUTER SOFTWARE

Assessment Criterion	KNOWLEDGE OF:	UNDERSTANDING OF:	DEEPER UNDERSTANDING OF:
2.1	Types of software	The characteristics and users of different softwares	Use in different contexts
Suggested learning activities	Learners could be provided with a table listing the types of software. They could work in small groups to research the different types of software to include a description of each.	Learners could be asked to create a presentation where they explain the characteristics and use of the different types of computer software using the information they gathered from the previous activity.	By developing this knowledge and understanding of the characteristics and use of different software, learners should be able to justify different types of software within a given context.
Useful links	http://opensourcestrategies.blogspot.co.uk/2005/09/freeware-vs-shareware-vs-open-source.html https://internetofthingsagenda.techtarget.com/definition/embedded-software https://www.techopedia.com/definition/29944/embedded-software	https://www.approvedindex.co.uk/software-developers/ bespoke-vs-off-the-shelf https://www.arrkgroup.com/thought-leadership/ bespoke-or-off-the-shelf-software-a-comparison/	
2.2	Application software		
Suggested learning activities	<p>Learners could work in small groups and produce information about the different productivity software to include what they are and what they do. This could follow on with a class discussion to compare notes and identify a composite list.</p> <p>Teachers could present a session on development tools providing guidance on what they are and what they do. It is important that teachers consider ways of helping learners remember the differences between them and the purpose of each.</p> <p>Learners could create an information guide on the different types of business software to include what they are and what they do.</p>		
Useful links	http://www.applicationperformancemanagement.org/software/productivity-software/ https://www.lifewire.com/programs-found-in-office-productivity-suites-2511774 https://whatis.techtarget.com/definition/productivity-software https://www.techopedia.com/definition/597/debugger https://www.programiz.com/article/difference-compiler-interpretor	https://searchsoftwarequality.techtarget.com/definition/integrated-development-environment https://www.autodesk.co.uk/solutions/cad-cam https://searchenterpriseai.techtarget.com/definition/expert-system http://www.futureelectronics.com/en/development-tools/dev-tool-software.aspx https://www.microcontrollertips.com/compilers-translators-interpretors-assemblers/	http://www.applicationperformancemanagement.org/software/productivity-software/ https://www.lifewire.com/programs-found-in-office-productivity-suites-2511774 https://whatis.techtarget.com/definition/productivity-software http://www.futureelectronics.com/en/development-tools/dev-tool-software.aspx https://www.programiz.com/article/difference-compiler-interpretor

Assessment Criterion	KNOWLEDGE OF:	UNDERSTANDING OF:	DEEPER UNDERSTANDING OF:
2.3	Utility software	The purpose of utility software for a given context	The advantages/disadvantages of each utility software
Suggested learning activities	Learners could be asked to research different types of utility software and make a list of the results of their research.	Learners could be provided with different contexts and asked to explain the purpose of the utility software for the given context. Learners could then add the information from this activity to the list produced in the first activity.	Learners could be asked to research the advantages and disadvantages of each of the types of utility software, explaining what these are and how this impacts on the end user for the same contexts from the previous activity.
Useful links	https://www.typesofeverything.com/types-of-utility-software/ http://www.bbc.co.uk/schools/gcsebitesize/ict/software/3applicationsrev1.shtml	https://www.quora.com/What-is-the-main-purpose-of-utility-software-What-are-the-different-types-of-utility-software	https://santafe.com/article/advantages-and-disadvantages-of-data-backup-cloud-backup https://databackupdigest.com/ https://www.hdd-tool.com/data-backup/online-backup.html#WsZEgojwZPY https://www.online-sciences.com/computer/the-advantages-and-disadvantages-of-anti-virus-software/ https://www.techwalla.com/articles/what-are-the-disadvantages-of-antiviruses https://www.techwalla.com/articles/the-advantages-of-an-antivirus https://www.techwalla.com/articles/the-disadvantages-of-compressing-files http://smallbusiness.chron.com/advantages-disadvantages-using-file-compression-27740.html
2.4	Operating systems	The functions of different types of operating systems	The benefits/limitations of different types of operating systems
Suggested learning activities	Learners could have a taught session where they are provided with information on the different types of operating systems and what the terminology means. They could be given a partially completed table which they will need to complete for the further activities.	Using the table from the previous activity, learners could be asked to work in pairs and partially complete the table to explain the functions for each type of operating system.	Learners could be asked to research the benefits and limitations of different types of operating systems. They could complete the table they have been using to store information and use it as part of a class discussion on the outcomes of the research.

Assessment Criterion	KNOWLEDGE OF:	UNDERSTANDING OF:	DEEPER UNDERSTANDING OF:
Useful links	http://www.differencebetween.info/difference-between-single-user-and-multi-user-operating-system http://www.ftms.edu.my/images/Document/CSCA0201%20-%20Fundamental%20of%20Computing/csa0201_ch06.pdf http://fundamentalsofos.blogspot.co.uk/2014/02/single-processor-vs-multi-processor.html https://www.ibm.com/support/knowledgecenter/en/SSZJPZ_11.7.0/com.ibm.swg.im.iis.ds.serverjob.dev.doc/topics/c_dsvjbref_Single_Processor_and_Multi_Processor_Systems.html	http://www.differencebetween.info/difference-between-single-user-and-multi-user-operating-system http://www.ftms.edu.my/images/Document/CSCA0201%20-%20Fundamental%20of%20Computing/csa0201_ch06.pdf http://www.teach-ict.com/as_a2_ict_new/ocr/A2_G063/332_designing_systems/operating_systems/home_op_sys.html http://fundamentalsofos.blogspot.co.uk/2014/02/single-processor-vs-multi-processor.html https://www.ibm.com/support/knowledgecenter/en/SSZJPZ_11.7.0/com.ibm.swg.im.iis.ds.serverjob.dev.doc/topics/c_dsvjbref_Single_Processor_and_Multi_Processor_Systems.html	http://www.differencebetween.info/difference-between-single-user-and-multi-user-operating-system http://www.ftms.edu.my/images/Document/CSCA0201%20-%20Fundamental%20of%20Computing/csa0201_ch06.pdf http://www.teach-ict.com/as_a2_ict_new/ocr/A2_G063/332_designing_systems/operating_systems/home_op_sys.html http://fundamentalsofos.blogspot.co.uk/2014/02/single-processor-vs-multi-processor.html https://www.ibm.com/support/knowledgecenter/en/SSZJPZ_11.7.0/com.ibm.swg.im.iis.ds.serverjob.dev.doc/topics/c_dsvjbref_Single_Processor_and_Multi_Processor_Systems.html
2.5	Communication methods	The characteristics and purpose of each communication method for a given context	The advantages/disadvantages of each communication method
Suggested learning activities	<p>Communication methods</p> <p>Two sets of cards could be prepared, one set with a description of the communication method and the other set with the name of each communication method.</p> <p>Learners could work in small groups where they have to match the description with the communication method.</p>	<p>Learners could be asked to work in the same group to research the characteristics and purpose of each type of communication method.</p>	<p>Learners could collate the information they have learnt from the different activities during previous activity and asked to create an information guide on the different types of communication methods. They could create a comparison of the different methods looking at the advantages and disadvantages of each method.</p>
Useful links	https://www.voipfone.co.uk/What_Is_Voip.php http://www.dummies.com/consumer-electronics/smartphones/blackberry/what-are-digital-personal-assistants/ http://www.visionaware.org/info/using-a-computer/comparing-digital-personal-assistants/45 https://searchunifiedcommunications.techtarget.com/definition/teleconference http://www.tecweb.org/eddevel/edtech/teleconf.html	https://www.voipfone.co.uk/What_Is_Voip.php http://www.dummies.com/consumer-electronics/smartphones/blackberry/what-are-digital-personal-assistants/ http://www.visionaware.org/info/using-a-computer/comparing-digital-personal-assistants/45 https://searchunifiedcommunications.techtarget.com/definition/teleconference https://searchunifiedcommunications.techtarget.com/definition/video-conference	https://www.eztalks.com/teleconferencing/advantages-and-disadvantages-of-teleconferencing.html http://www.bbc.co.uk/schools/gcsebitesize/ict/implications/2workpatternsrev6.shtml https://www.sciencelearn.org.nz/videos/124-communicating-with-satellites http://www.bbc.co.uk/schools/gcsebitesize/science/triple_ocr_gateway/space_for_reflection/satellite_communication/revision/1/

Assessment Criterion	KNOWLEDGE OF:	UNDERSTANDING OF:	DEEPER UNDERSTANDING OF:
2.6	Software troubleshooting		Use in different contexts
Suggested learning activities	<p>This is an ideal opportunity for Meaningful Employer Involvement (MEI) requirement and asking the friendly school technicians/network manager to deliver a session on common faults, the use of troubleshooting tools and the documentation used.</p> <p>Learners could make notes or conduct further research after the session and make notes on their findings.</p>		By developing knowledge of software troubleshooting tools, learners should be able to justify the use of different troubleshooting tools within a given context.
Useful links	<p>http://www.toptenreviews.com/software/articles/5-common-computer-problems-solutions/</p> <p>https://www.techradar.com/news/software/operating-systems/52-windows-problems-and-solutions-716020</p> <p>https://www.cyberlink.com/support/faq-content.do?id=14592</p> <p>https://www.registryrecycler.com/blog/2013/04/6-common-problems-of-pc-random-restarts/</p> <p>https://www.techspot.com/community/topics/troubleshooting-sudden-reboots-crashes.44306/</p> <p>https://answers.microsoft.com/en-us/windows/forum/windows_10-performance/unexpected-reboots-how-to-fix-repeated-windows-10/1f235e2a-36b7-4392-ae81-69b537d71b21</p>	<p>https://www.techsupportall.com/10-best-computer-diagnostic-tools-technicians/</p> <p>https://www.techrepublic.com/blog/five-apps/five-benchmarking-tools-to-diagnose-or-compare-pc-performance/</p> <p>https://www.gizmodo.com.au/2017/10/simple-benchmarks-to-run-on-your-computer-to-check-if-its-working-well/</p> <p>https://www.pcworld.com/article/236004/how_to_benchmark_your_pc.html</p> <p>https://www.computerhope.com/issues/chsoft.htm</p> <p>https://www.techsoup.org/support/articles-and-how-tos/eleven-tips-for-troubleshooting-software</p>	

Assessment Criterion	KNOWLEDGE OF:	UNDERSTANDING OF:	DEEPER UNDERSTANDING OF:
2.7	Protocols	The features, purpose and uses of different protocols for different contexts	
Suggested learning activities	<p>This again is an area where the school/college technicians can be utilised to co-deliver a session on the different protocols.</p> <p>Learners could be asked to research the different protocols listed in the teaching content and prepare a table which includes the features of each protocol as well as what each one is.</p> <p>The learners could then share their tables with other members of the class and use them as a basis of a group discussion facilitated by the teacher. They could be asked to agree a description of each protocol and its associated features.</p>	<p>The learners could work in small groups to extend their tables to include the features, purposes and uses of the different protocols. This could be established from research using the Internet or from networking text books.</p> <p>The teacher could test the learners understanding by having a team quiz where each team is provided with a series of different contexts where protocols are used. Each team is then asked to explain the purpose and use of appropriate protocols for each context.</p>	
Useful links	<p>https://searchnetworking.techtarget.com/definition/protocol</p> <p>https://www.lifewire.com/definition-of-protocol-network-817949</p> <p>https://www.youtube.com/watch?v=g_kNTa9y6ls</p> <p>https://www.youtube.com/watch?v=b9HafRqtVWc</p>	<p>https://www.youtube.com/watch?v=SzSXHv8RKdM</p> <p>https://technet.microsoft.com/en-gb/library/cc958821.aspx</p> <p>https://learningnetwork.cisco.com/thread/5769</p>	

LO3 – UNDERSTAND BUSINESS IT SYSTEMS

Assessment Criterion	KNOWLEDGE OF:	UNDERSTANDING OF:	DEEPER UNDERSTANDING OF:
3.1	Types of servers		
Suggested learning activities	<p>Teachers could provide the learners with a definition for a server. The list of servers from the teaching content could be displayed and the class asked if they could state what each of the servers are used for.</p> <p>Learners could work in small groups to prepare images which would show what each type of server is used for.</p>		
Useful links	<p>https://techspirited.com/different-types-of-servers https://whatis.techtarget.com/definition/server http://www.oactechnology.com/it-blog/3-types-servers/</p>		
3.2	Virtualisation		The benefits and limitations of using virtualisation to a business
Suggested learning activities	<p>A class discussion could take place on what virtualisation is. This could lead to the group agreeing on a definition of virtualisation.</p> <p>Learners could be given a table with the list of types of virtualisation from the teaching content and asked to work in small groups to research each type of virtualisation and provide a description of what each one is. They could then prepare a presentation to present their findings to the rest of the class.</p> <p>A definitive list with a description could then be drawn up from the combined presentations.</p>		<p>Learners could be provided with different business contexts and asked to research into the benefits and limitations of using each type of virtualisation.</p> <p>Each learner could then create a table with the list of virtualisations and the benefits and limitations of each.</p>
Useful links	<p>https://searchservervirtualization.techtarget.com/definition/virtualization https://www.networkworld.com/article/3234795/virtualization/what-is-virtualization-definition-virtual-machine-hypervisor.html</p>		<p>https://software.intel.com/en-us/articles/the-advantages-of-using-virtualization-technology-in-the-enterprise https://www.centergrid.com/top-5-benefits-of-virtualization/</p>

Assessment Criterion	KNOWLEDGE OF:	UNDERSTANDING OF:	DEEPER UNDERSTANDING OF:
3.3	Networking characteristics (networking topologies and networking addressing)	The uses of different topologies for a given context	Use in different contexts
Suggested learning activities	<p>Learners should be provided with an explanation of the term 'networking topology'.</p> <p>The learners could be provided with diagrammatical representations of each of the topologies listed in the teaching content and then through a formal teaching and learning session, annotate their diagrams with the following:</p> <ul style="list-style-type: none"> • name of the topology • an overview of how it works. <p>Learners could work in small groups to research network addressing and to prepare a leaflet which describes:</p> <ul style="list-style-type: none"> • what the term network addressing means • an overview of how it works. 	Learners could use the same diagrammatical representations for the network topologies and annotate them further to include the uses of the different topologies in different business contexts.	By developing knowledge of network topologies learners should be able to justify the use of different network topologies within a given context.
Useful links	https://whatis.techtarget.com/search/query?q=topology https://www.techopedia.com/definition/5538/network-topology https://www.lifewire.com/computer-network-topology-illustrated-4064043 https://www.techopedia.com/definition/20969/network-address https://www.lifewire.com/introduction-to-network-addresses-817378 http://www.idc-online.com/technical_references/pdfs/data_communications/Network_Addressing.pdf https://www.youtube.com/watch?v=O3LiQgYkWbY https://www.youtube.com/watch?v=EkNq4TrHP_U	https://www.webopedia.com/quick_ref/topologies.asp https://techspirited.com/advantages-disadvantages-of-different-network-topologies https://www.studytonight.com/computer-networks/network-topology-types https://www.youtube.com/watch?v=WX5GaH5ootc https://www.youtube.com/watch?v=F35sSPTahS8	

Assessment Criterion	KNOWLEDGE OF:	UNDERSTANDING OF:	DEEPER UNDERSTANDING OF:
3.4	Connectivity methods	The characteristics and purpose of different connectivity methods for a given context	Use in different contexts
Suggested learning activities	Learners could be given a list of connectivity methods from the teaching content of the unit and asked to produce a presentation to include a description for each connectivity method. Each learner could present the results of their research which could then follow on with a group discussion on the findings. Learners could improve their own research by including agreed information that had been found by others.	The teacher could lead a class session by providing different business contexts and asking the learners to discuss: <ul style="list-style-type: none"> the characteristics of the connectivity method the purpose of the connectivity method. 	By developing knowledge of the characteristics and purpose of connectivity methods learners should be able to justify the use of different connectivity methods within a given context.
Useful links	https://www.lifewire.com/types-of-network-connections-4059835 https://www.youtube.com/watch?v=IYQ2mfnGnOk	https://www.youtube.com/watch?v=aQScX7B3ntY https://www.youtube.com/watch?v=QpO0FwN9Png https://www.youtube.com/watch?v=U-XIhe5ovgU	
3.5	Business systems	The purpose of each business system in a given context	The benefits/limitations of each system in a given context
Suggested learning activities	Learners could watch each of the YouTube clips listed below and asked to make notes as follows: <ul style="list-style-type: none"> the type of business system the use of each type of business system. 	Learners could work in small groups and be given a range of business contexts. For each context they would be required to: <ul style="list-style-type: none"> identify suitable business systems explain the purpose of each of the selected business systems. 	For each of the business systems in the teaching content, learners could be asked to research the benefits and limitations of each type of business system and create a table with the results of their research.
Useful links	https://www.youtube.com/watch?v=iOTWQGt9KVk https://www.youtube.com/watch?v=krFC-JcGhHs https://www.youtube.com/watch?v=SElp-Gfgf1g https://www.youtube.com/watch?v=qilXJ0lhN2g https://www.boxtheorygold.com/blog/bid/26268/so-what-exactly-is-a-business-system https://www.leanmethods.com/resources/articles/what-business-system-and-why-do-you-need-one/	https://www.youtube.com/watch?v=iOTWQGt9KVk https://www.youtube.com/watch?v=krFC-JcGhHs https://www.youtube.com/watch?v=SElp-Gfgf1g https://www.youtube.com/watch?v=qilXJ0lhN2g https://www.boxtheorygold.com/blog/bid/26268/so-what-exactly-is-a-business-system https://www.leanmethods.com/resources/articles/what-business-system-and-why-do-you-need-one/	https://eternalsunshineoftheismind.wordpress.com/2013/02/16/advantages-and-disadvantages-of-information-systems-for-businesses/ https://bizfluent.com/about-5494879-advantages-disadvantages-information-management-systems.html http://www.nowcommerce.com/blog/7-advantages-of-order-processing-software

LO4 – UNDERSTAND EMPLOYABILITY AND COMMUNICATION SKILLS USED IN AN IT ENVIRONMENT

Assessment Criterion	KNOWLEDGE OF:	UNDERSTANDING OF:	DEEPER UNDERSTANDING OF:
4.1	Communication skills		Use in different contexts
Suggested learning activities	During a class session, the learners could be asked to identify different communication methods. For each of the identified communication skills, they could then be asked to write down the barriers.		By developing knowledge of communication skills learners should be able to justify the use of different communication skills within a given context.
Useful links	https://www.skillsyouneed.com/ips/communication-skills.html https://www.mindtools.com/page8.html https://www.skillsyouneed.com/ips/barriers-communication.html http://www.communicationstudies.com/barriers-to-communication		https://www.skillsyouneed.com/ips/communication-difficult-situations.html https://www.wikihow.com/Adapt-the-Way-You-Communicate-to-Different-Situations https://fleximize.com/articles/000592/communication-styles http://www.bbc.co.uk/skillswise/factsheet/en37spea-l1-f-speaking-in-different-situations
4.2	Communication technology	The use of different technologies	Use in different contexts
Suggested learning activities	Teachers could divide the class into teams and have a quiz where learners are asked to identify different communication technologies as identified in the teaching content of the unit.	The quiz used previously could be extended to the same teams being provided with a range of contexts and asked to state which communication technology could be used.	By developing knowledge of the use of communication technology learners should be able to justify the use of different communication technologies within a given context.
Useful links	https://searchunifiedcommunications.techtarget.com/definition/instant-messaging http://tubularinsights.com/bloggng-vs-vlogging/	http://tubularinsights.com/bloggng-vs-vlogging/	
4.3	Personal attributes		Why they are important for certain job roles and valued by employers
Suggested learning activities	Learners could be provided with a list of personal attributes in a table where they are asked to complete the column where they describe each one.		Learners could research a range of IT job roles from various careers and IT job web sites so that they can identify what personal attributes would be required. They would then explain why these personal attributes are important for each of the job roles and why the employers value these attributes.
Useful links	http://tubularinsights.com/bloggng-vs-vlogging/		https://www.prospects.ac.uk/job-profiles/browse-sector/information-technology

Assessment Criterion	KNOWLEDGE OF:	UNDERSTANDING OF:	DEEPER UNDERSTANDING OF:
4.4	Ready for work		The importance of being ready for work
Suggested learning activities	The local careers company or a person in HR from a company could give a talk to the group on what it means to be ready for work. Learners could be asked to write a short report on what it means to be ready for work using the bullet points within the teaching content.		The report from the previous activity could be extended to the learners explaining why it is important to be ready for work.
Useful links	https://www.prospects.ac.uk/job-profiles/browse-sector/information-technology		https://www.jacolorado.org/what-does-it-mean-to-be-work-ready/
4.5	Job roles	The technical and non-technical skills required for different job roles	
Suggested learning activities	Learners could be provided with a list of job roles as identified in the teaching content for the unit and research the different job roles. They could be asked to produce an information leaflet where they describe: <ul style="list-style-type: none"> • what the job role is • the type of activities that would be carried out • the type of businesses where these jobs would be found. 	The learners could be asked to create a table where they identify the technical and non-technical skills required for each of the job roles.	
Useful links	https://www.prospects.ac.uk/job-profiles/browse-sector/information-technology https://targetpostgrad.com/subjects/computer-science-and-it	https://www.robertwalters.co.uk/career-advice/top-10-career-change-it-roles.html [
4.6	Professional bodies	The purpose of professional bodies	Benefits/limitations of membership
Suggested learning activities	Learners could be asked to research the different professional bodies there are for the IT industry and make a list with the following information: <ul style="list-style-type: none"> • the name of the professional body • the IT sector it relates to. 	The learners could be asked to research the purpose of each of the professional bodies they have identified in the list and then to prepare an information leaflet.	The learners could be asked to extend their information leaflet to include the benefits and limitations of membership to employees and the companies they work for.
Useful links	https://targetpostgrad.com/subjects/computer-science-and-it/professional-it-and-computing-bodies http://www.directoryoftheprofessions.co.uk/sites-professions-IT-comp.html	http://www.directoryoftheprofessions.co.uk/sites-professions-IT-comp.html	http://www.directoryoftheprofessions.co.uk/sites-professions-IT-comp.html

Assessment Criterion	KNOWLEDGE OF:	UNDERSTANDING OF:	DEEPER UNDERSTANDING OF:
4.7	Industry certification		Benefits of having industry certification
Suggested learning activities	Learners could be asked to compile a list of vendors who offer industry certification for the IT industry. Through a class discussion, the learners could agree a "Top 10" list of industry certification vendors e.g. CompTIA, CISCO, Microsoft etc.		The learners could be asked to research the agreed top 10 vendors and asked to produce an information leaflet explaining the benefits to employees and the companies they work for by instead of achieving industry certification.
Useful links	http://www.gocertify.com/certifications/vendor-list.html https://www.pluralsight.com/blog/it-ops/it-certification-101 https://www.pcworld.com/article/209227/it-certifications-that-matter-for-helpdesk-tech-support-pros.html		http://www.gocertify.com/ https://www.pluralsight.com/blog/it-ops/it-certification-101 https://www.pcworld.com/article/209227/it-certifications-that-matter-for-helpdesk-tech-support-pros.html

LO5 – UNDERSTAND ETHICAL AND OPERATIONAL ISSUES AND THREATS COMPUTER SYSTEMS

Assessment Criterion	KNOWLEDGE OF:	UNDERSTANDING OF:	DEEPER UNDERSTANDING OF:
5.1	Ethical issues	How ethical issues can be addressed	
Suggested learning activities	<p>Through a group discussion, the learners could agree a definition for the term “ethical issues associated with IT and computer systems”.</p> <p>This could follow on with learners being asked to research different ethical issues that can arise and explain what they are. The bullet points from the teaching content can be used as a starting point.</p>	Learners could use the previous activity where the learners researched the different types of ethical issues and research how these can be addressed. In many instances these can be linked to operational issues.	
Useful links	<p>https://www.useoftechnology.com/5-ethical-challenges-information-technology/</p> <p>http://smallbusiness.chron.com/ethical-dilemma-use-information-technology-18366.html</p> <p>https://www.computerworld.com/article/2557944/security0/ethical-issues-for-it-security-professionals.html</p> <p>http://wkcbizzmichael.blogspot.co.uk/2014/01/legaethical-and-operational-issues-of.html</p>	<p>https://www.asha.org/slp/schools/prof-consult/10step/</p> <p>http://www.workplaceethicsadvice.com/2014/05/how-to-handle-ethical-issues-in-the-workplace.html</p>	
5.2	Operational issues		
Suggested learning activities	Learners could be given the list of operational issues identified from the teaching content and during a group discussion, consider how these operational issues relate to the ethical issues they previously researched. There will be links between some of them. They could then create a table where they list the operational issues, describe what each issue is and where appropriate, link the ethical issue.		
Useful links	<p>http://operationalissues.blogspot.co.uk/</p> <p>http://wkcbizzmichael.blogspot.co.uk/2014/01/legaethical-and-operational-issues-of.html</p>		

Assessment Criterion	KNOWLEDGE OF:	UNDERSTANDING OF:	DEEPER UNDERSTANDING OF:
5.3	Threats		
Suggested learning activities	Learners could be provided with a list of threats as identified in the teaching content and then work in small groups to research what each type of threat is. Each small group could present their findings to the main group.		
Useful links	https://www.getcybersafe.gc.ca/cnt/rsks/cmmn-thrts-en.aspx https://www.technologyreview.com/s/609641/six-cyber-threats-to-really-worry-about-in-2018/ https://www.securityweek.com/virus-threats https://www.hq.nasa.gov/security/it_threats_vulnerabilities.htm		
5.4	Physical security	The characteristics of different physical security methods	Use in different contexts
Suggested learning activities	Learners could work in small groups and using the list of physical security methods from the teaching content research different types of physical security. They could be asked to create an information guide which can be shared with the rest of the class.	A class discussion could be facilitated by the teacher to consider the characteristics of different physical security methods.	By developing knowledge of the characteristics of different physical security methods learners should be able to justify the use of different physical security methods within a given context.
Useful links	https://www.techrepublic.com/blog/10-things/10-physical-security-measures-every-organization-should-take/ http://www.teach-ict.com/as_a2_ict_new/ocr/AS_G061/317_role_impact_ict/ict_crime/miniweb/pg5.htm https://searchsecurity.techtarget.com/definition/physical-security https://protectivesecurity.govt.nz/physical-security/physical-security-of-your-ict-assets-and-facilities/ https://electronics.howstuffworks.com/gadgets/high-tech-gadgets/rfid.htm	http://www.teach-ict.com/as_a2_ict_new/ocr/AS_G061/317_role_impact_ict/ict_crime/miniweb/pg5.htm https://searchsecurity.techtarget.com/definition/physical-security https://protectivesecurity.govt.nz/physical-security/physical-security-of-your-ict-assets-and-facilities/ https://electronics.howstuffworks.com/gadgets/high-tech-gadgets/rfid.htm https://searchsecurity.techtarget.com/definition/biometrics	

Assessment Criterion	KNOWLEDGE OF:	UNDERSTANDING OF:	DEEPER UNDERSTANDING OF:
5.5	Digital security	The use of different digital security methods	Use in different contexts
Suggested learning activities	Learners could be set the task of creating a table with the list of digital security methods as identified in the teaching content. They could be asked to include a column where they describe what each method is and a column where they identify the characteristics of each.	The learners could be provided with a number of scenarios where they have to select which digital security methods could be used and provide a justification as to why these methods are the most appropriate to use.	By developing knowledge of the characteristics of different digital security methods learners should be able to justify the use of different digital security methods within a given context.
Useful links	https://www.youtube.com/watch?v=xZq2e1NcgPw https://www.professormesser.com/free-a-plus-training/220-902/digital-security-prevention-methods/ http://www.cram.com/flashcards/digital-security-prevention-methods-8013761	https://www.youtube.com/watch?v=xZq2e1NcgPw https://www.professormesser.com/free-a-plus-training/220-902/digital-security-prevention-methods/ http://www.cram.com/flashcards/digital-security-prevention-methods-8013761	
5.6	Safe disposal of data and computer equipment		
Suggested learning activities	<p>Learners could be asked to research the legislation associated with the safe disposal of data and computer equipment. They could develop an information guide which can be shared with other members of the class.</p> <p>Learners could be asked to research each of the following:</p> <ul style="list-style-type: none"> • overwrite data • electromagnetic wipe • physical destruction. <p>They could add to the information guide previously created and provide a description as to what each of the above methods are and how they destroy the data and/or computer equipment.</p>		

Assessment Criterion	KNOWLEDGE OF:	UNDERSTANDING OF:	DEEPER UNDERSTANDING OF:
Useful links	http://www.it-trading.co.uk/content/legal_obligations.htm http://www.it-green.co.uk/legislation.html http://www.recycling-guide.org.uk/materials/computers.html https://ico.org.uk/for-organisations/guide-to-the-general-data-protection-regulation-gdpr/ https://www.makeuseof.com/tag/impossible-recover-data-overwritten-hard-drive-technology-explained/ https://www.protondata.com/blog/data-security/overwriting-not-enough-erase-data/ https://techterms.com/definition/overwrite https://whatis.techtarget.com/definition/wipe http://wmich.edu/it/policiesdatawipedefinitions http://datasecurityinc.com/security/degausser.html https://www.researchgate.net/publication/253314119_Working_principle_of_an_Electromagnetic_wiping_system https://www.csoonline.com/article/2130822/it-audit/the-in-depth-guide-to-data-destruction.html https://datakillers.com/physical_destruction/ https://www.wikihow.com/Destroy-a-Hard-Drive https://www.cnet.com/news/the-right-way-to-destroy-an-old-hard-drive/		



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