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**Knowledge Rich Curriculum Map**

OCR Cambridge Technicals Level 3 IT

Unit 1



| **Unit 1:** **Fundamentals of IT** |  |  |  |  |
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| **Lesson/Learning Sequence**  | **Intended Knowledge:***Students will know that…* | **Tiered Vocabulary**  | **Prior Knowledge:***In order to know this students, need to already know that…* | **Assessment**  |
| **Lesson:** **1.1 Computer Hardware** | * Students will know about the different types of computer hardware which are required for a variety of computer systems.
* Students will know about the benefits, limitations and uses of computer hardware.
 | InputOutputBenefitsLimitationsHardwareDevicesIntegrated | * Students need to already know that there are input and output devices.
* Students need to already know what these devices would be used for.
 | QuestioningTasksExam Question Practice |
| **Lesson:** **1.2 Computer Components** | * Students will know about the component parts of a computer system and their characteristics.
* Students will develop their understanding of the purpose of each component.
* Students will know about storage devices, memory (RAM, ROM, Cache) and expansion cards.
 | PortableComponentsCharacteristicsStorageProcessorsMotherboardsMemory | * Students need to already know about some storage devices such as hard drives, flash drives and Cloud storage.
* Students need to already know the difference between RAM and ROM.
 | QuestioningTasksExam Question Practice |
| **Lesson:** **1.3 Types of Computer System** | * Students will know about the different types of computer systems.
* Students will know where and how they are used, benefits and limitations of each type of computer system and a justification of a suitable system in a given context.
* Students will know that some devices feature embedded systems, such as modern cars, washing machines and other home appliances.
 | UsesBenefitsLimitationsHybridMainframeQuantumEmbedded System | * Students need to already know some benefits uses of desktop PCs, tablets and smartphones.
* Students need to already know about benefits such as costs, security and portability.
 | QuestioningTasksExam Question Practice |
| **Lesson:** **1.4 Connectivity Methods** | * Students will know about different connectivity methods and their characteristics.
* Students will understand their purpose and justification of different methods within a given context.
 | CharacteristicsPurposeJustificationWirelessBluetooth3G/4G | * Students need to already know about wireless technologies such as Bluetooth and Wi-Fi.
* Students need to already know that 3G/4G and now 5G is used as a connectivity for mobile phones.
 | QuestioningTasksExam Question Practice |
| **Lesson:** **1.5 Communication Hardware** | * Students will know about different communications hardware and their characteristics.
* Students will understand the purpose and use of communication hardware.
* Students will know the difference between a combined or hybrid device, which often provides the functionality of a modem, router, switch and wireless access point in one device, and the individual devices.
 | Communications FunctionalityHybridHubSwitchRouterModem | * Students need to already know that routers are used to set up networks, particularly at home.
* Students need to already know that communication hardware is used to access the internet and share resources and information.
 | QuestioningTasksExam Question Practice |
| **Lesson:** **1.6 Hardware Troubleshooting** | * Students will know about the process needed to troubleshoot common hardware problems as well as the documentation involved.
 | FaultsDocumentationTroubleshootingHardware | * Students need to already know that troubleshooting is when you are identifying faults and potential solutions.
 | QuestioningTasksExam Question Practice |
| **Lesson:** **1.7 Units of Measurement** | * Students will know about the units of measurement used in IT.
* Students will know difference between metric and binary units of measurements and the comparisons in sizes.
 | ComparisonMeasurementConversionByteKilobytesMegabytesBinary | * Students need to already know that sizes for such as photos and music are measured in KB and GB.
* Students need to already know that the units of measurement go from smallest to largest in the following order: KB, MB, GB, TB, PB)
 | QuestioningTasksExam Question Practice |
| **Lesson:** **1.8 Number Systems** | * Students will know that binary numbers are made up of a sequence of 0s and 1s, usually written in 8-bit.
* Students will know that decimal is a number system and is the normal system that we use in everyday life.
* Students will know that hexadecimal is a 16 part number system which is represented using 0-9 and A-F.
 | AdditionMultiplicationDecimalBinaryDenaryHexadecimal | * Students need to already know basic knowledge of binary numbers with 0 being off and 1 being on.
 | QuestioningTasksExam Question Practice |
| **Lesson:** **1.9 Number Conversion** | * Students will know that denary numbers can be converted in binary using 8-bit code.
* Students will know that they will use two nibbles to convert binary in to hexadecimal.
 | AdditionIntegerConversionBinaryDenaryHexadecimal | * Students need to already know that denary is the numbers we use in the real world.
* Students need to already know that binary uses a sequence of 0s and 1s.
 | QuestioningTasksExam Question Practice |
| **Lesson:****2.1 Types of Software** | * Students will know that open source is where you can edit the code and closed source is where you can’t.
* Students will know that off the shelf is a ready-made product where bespoke is custom made software for you.
 | CustomEmbeddedFeatureBespokeSharewareFreeware | * Students need to already know that they can buy software with a set of ready built in features.
* Students need to already know that some software can be customised to suit specific purposes.
 | QuestioningTasksExam Question Practice |
| **Lesson:****2.2 Applications Software** | * Students will know that software has different purposes such as productivity, development or business.
* Students will know why an organisation will benefit from using these types of specialist software.
 | ProductivityBusinessCollaborationSpreadsheetDatabaseDebuggerIntegrated | * Students will already know about the Microsoft Office package and the software features for word processing, spreadsheets and email.
* Students will already know that there are a range of different software and apps for different devices such as PCs, laptops and smartphones.
 | QuestioningTasksExam Question Practice |
| **Lesson:** **2.3 Utility Software** | * Students will know that devices have utility software which will operate certain functions such as back-ups, anti-virus and compression of files.
 | UtilityBack upAnti-VirusCompression | * Students will already know that back ups are required to minimise the impact of losing files.
* Students will already know that security measures need to be put in place to protect devices from viruses and other risks.
 | QuestioningTasksExam Question Practice |
| **Lesson:****2.4 Operating Systems** | * Students will know that operating systems can be for single user and multiuser and also for single processor or multiprocessor.
 | ResourcesProgramsProcessorHardwareSoftware | * Students will already know that an operating system is system software that manages computer hardware and software resources, and provides common services for computer programs.
 | QuestioningTasksExam Question Practice |
| **Lesson:****2.5 Communication Methods** | * Students will know about a range of different communication methods such as video conferencing, teleconferencing and social networking.
* Students will know about the different purposes for communication methods between colleagues, reaching out to customers and for marketing.
 | CommunicationMessagingPersonal AssistantsVoIPVideo ConferencingTeleconference | * Students will already know about features and purposes for emails and social networking.
 | QuestioningTasksExam Question Practice |
| **Lesson:** **2.6 Software Troubleshooting** | * Students will know about software troubleshooting tools which will log problems and suggest potential solution methods.
 | FaultsBehaviourDocumentationTroubleshootingRebootingInstallable | * Students will already know that there can be faults in a software which can cause problems with the software working effectively.
 | QuestioningTasksExam Question Practice |
| **Lesson:****2.7 Protocols** | * Students will know that protocols are a set of rules outlining how connected devices can communicate across a network.
* Students will know that there are protocols for accessing the internet, emails or transferring files on a range of different devices.
 | FeaturesPurposeUsageProtocolSMTPPOPFTP | * Students will already know some of the protocols such as IP and HTTP and where/why they might be used.
 | QuestioningTasksExam Question Practice |
| **Lesson:** **3.1 Types of Servers** |  |  |  | QuestioningTasksExam Question Practice |
| **Lesson:****3.2 Virtualisation** |  |  |  | QuestioningTasksExam Question Practice |
| **Lesson:****3.3 Networking Characteristics** |  |  |  | QuestioningTasksExam Question Practice |
| **Lesson:****3.4 Connectivity Methods** |  |  |  | QuestioningTasksExam Question Practice |
| **Lesson:** **3.5 Business Systems** |  |  |  | QuestioningTasksExam Question Practice |
| **Lesson:****4.1 Communication Skills** | * Students will know that there are positive interpersonal skills which organisations look for such as eye contact and body language.
* Students will know of the purpose, benefits and barriers to using verbal and written communications.
 | LanguageVerbalWrittenBarriersInterpersonal | * Students need to already know some of the written communications such as letters, emails and social networking.
* Students need to already know the importance of making good impressions to current/potential employers.
 | QuestioningTasksExam Question Practice |
| **Lesson:****4.2 Communication Technology** | * Students will know about a range of communication technology including their features and the benefits of using them in a business context.
 | CommunicationFeaturesBenefitsWord ProcessingBlog/VlogsInstant Messaging | * Students need to already know about the features on Microsoft software such as Word, PowerPoint and Outlook.
 | QuestioningTasksExam Question Practice |
| **Lesson:****4.3 Personal Attributes** | * Students will know what personal attributes are and why they are valued by an employer.
* Students will know which personal attributes are important for certain job roles such as Network Manager, IT Technician, Programmer, Web Designer and Animator.
 | PersonalAttributesRespectLeadershipDeterminationIndependence | * Students need to already know good quality skills that people look for in jobs and at school.
* Students need to already know the importance of being organised and resilient.
 | QuestioningTasksExam Question Practice |
| **Lesson:****4.4 Ready for Work** | * Students will know about appropriate clothing and dress codes for different job roles/situations.
* Students will know about having positive attitudes and the impact it can have on your reputation in an organisation.
 | PresentationPersonal GroomingAppearanceAttitude | * Students need to already know about dress codes (uniforms) and the reasons for why they are in place.
 | QuestioningTasksExam Question Practice |
| **Lesson:****4.5 Job Roles** | * Students will know about the 5 IT industry job roles that will be covered in the exam: Network Manager, IT Technician, Programmer, Web Designer, Animator.
* Students will know that technical skills are IT specialist and non-technical skills are general skills which are beneficial for all job roles.
 | Key skillsTechnicalNon-TechnicalNetwork ManagerIT TechnicianProgrammerWeb DesignerAnimator | * Students will already know certain responsibilities of IT technicians and Web Designers.
 | QuestioningTasksExam Question Practice |
| **Lesson:****4.6 Professional Bodies** | * Students will know that a professional body is an organisation which has individual members of the same profession.
* Students will know the benefits and limitations of being part of a professional body.
 | PurposeBenefitsLimitationsProfessional Bodies | * Students will already know that professional development or training is a continuous part of a job role.
 | QuestioningTasksExam Question Practice |
| **Lesson:****4.7 Industry Certification** | * Students will know that an industry certification is a qualification which individuals can complete.
* Students will know the benefits of this to an individual and also to an employer.
 | BenefitsLimitationsEmployerIndustry Certification | * Students will already know that there are qualifications other than GCSE and A-Level which individuals can complete to further their careers.
 | QuestioningTasksExam Question Practice |
| **Lesson:****5.1 Ethical Issues** | * Students will know what an ethical issue is in an organisation and how they can be influenced by legislation.
* Students will know that ethical issues can cover discrimination, data protection and staying safe online.
 | DiscriminationSafetyEthicalWhistle BlowingCodes of PracticeOperational | * Students will already know about diversity such as gender, disability, sexuality, age and ethnicity and the importance of equality.
 | QuestioningTasksExam Question Practice |
| **Lesson:****5.2 Operational Issues** | * Students will know what an operational issue is and how it can impact the running of an organisation.
* Students will know that organisational policies are codes of conduct which employees must follow.
* Students will know that there is legislation that organisations must follow such as Health and Safety at Work Act (1974), Data Protection Act (2018) and Computer Misuse Act.
 | Security InformationHealth and SafetyLegislationDisaster PlanningOperationalAcceptable Use PolicyChange Management | * Students will already know the importance backing up work.
* Students will already know the health and safety risks of using ICT equipment.
 | QuestioningTasksExam Question Practice |
| **Lesson:****5.3 Threats** | * Students will know that there are a range of malware threats such as viruses, trojans and spyware.
* Students will know of the negative impact that hacking can have on an organisation’s reputation.
* Students will know that social engineering and phishing is a method of trying to trick people out of their personal information.
 | ThreatTheftScamTrojanVirusHackingSocial Engineering | * Students will already know about viruses, hackers and scammers and the damage and disruption that they can cause.
 | QuestioningTasksExam Question Practice |
| **Lesson:****5.4 Physical Security** | * Students will know that there are physical security measures which can be put in place to protect from cyber threats.
* Students will know that biometrics can include fingerprint, retinal, face and voice recognition.
 | PhysicalSecurityPrivacyBiometricsRFIDTokens | * Students will already know the importance of locking offices and server rooms to protect information.
* Students will already know that personal information must be kept safe due to Data Protection Act (2018)
 | QuestioningTasksExam Question Practice |
| **Lesson:****5.5 Digital Security** | * Students will know that there are digital security measures which can be put in place to protect from cyber threats.
* Students will know that anti-virus software and firewalls are used to monitor and protect the network from malicious threats.
 | ThreatsPermissionsPasswordsAnti-virusFirewallsEncryption | * Students will already know that accounts use usernames and passwords to protect from hackers (unauthorised access).
 | QuestioningTasksExam Question Practice |
| **Lesson:****5.6 Safe Disposal of Data and Computer Equipment** | * Students will know that there is a number of legislations in place on the safe disposal of data.
* Students will know the differences between overwriting data and electromagnetically wiping data.
 | LegislationOverwriteDestructionElectromagnetic WipeDegausser | * Students will already know that data and information can still be found on devices if they haven’t been removed properly.
 | QuestioningTasksExam Question Practice |