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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. | Input  Output  Benefits  Limitations  Hardware  Devices  Integrated | * Students need to already know that there are input and output devices. * Students need to already know what these devices would be used for. | Questioning  Tasks  Exam 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. | Portable  Components  Characteristics  Storage  Processors  Motherboards  Memory | * 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. | Questioning  Tasks  Exam 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. | Uses  Benefits  Limitations  Hybrid  Mainframe  Quantum  Embedded 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. | Questioning  Tasks  Exam 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. | Characteristics  Purpose  Justification  Wireless  Bluetooth  3G/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. | Questioning  Tasks  Exam 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  Functionality  Hybrid  Hub  Switch  Router  Modem | * 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. | Questioning  Tasks  Exam 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. | Faults  Documentation  Troubleshooting  Hardware | * Students need to already know that troubleshooting is when you are identifying faults and potential solutions. | Questioning  Tasks  Exam 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. | Comparison  Measurement  Conversion  Byte  Kilobytes  Megabytes  Binary | * 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) | Questioning  Tasks  Exam 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. | Addition  Multiplication  Decimal  Binary  Denary  Hexadecimal | * Students need to already know basic knowledge of binary numbers with 0 being off and 1 being on. | Questioning  Tasks  Exam 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. | Addition  Integer  Conversion  Binary  Denary  Hexadecimal | * 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. | Questioning  Tasks  Exam 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. | Custom  Embedded  Feature  Bespoke  Shareware  Freeware | * 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. | Questioning  Tasks  Exam 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. | Productivity  Business  Collaboration  Spreadsheet  Database  Debugger  Integrated | * 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. | Questioning  Tasks  Exam 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. | Utility  Back up  Anti-Virus  Compression | * 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. | Questioning  Tasks  Exam 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. | Resources  Programs  Processor  Hardware  Software | * 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. | Questioning  Tasks  Exam 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. | Communication  Messaging  Personal Assistants  VoIP  Video Conferencing  Teleconference | * Students will already know about features and purposes for emails and social networking. | Questioning  Tasks  Exam Question Practice |
| **Lesson:**  **2.6 Software Troubleshooting** | * Students will know about software troubleshooting tools which will log problems and suggest potential solution methods. | Faults  Behaviour  Documentation  Troubleshooting  Rebooting  Installable | * Students will already know that there can be faults in a software which can cause problems with the software working effectively. | Questioning  Tasks  Exam 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. | Features  Purpose  Usage  Protocol  SMTP  POP  FTP | * Students will already know some of the protocols such as IP and HTTP and where/why they might be used. | Questioning  Tasks  Exam Question Practice |
| **Lesson:**  **3.1 Types of Servers** |  |  |  | Questioning  Tasks  Exam Question Practice |
| **Lesson:**  **3.2 Virtualisation** |  |  |  | Questioning  Tasks  Exam Question Practice |
| **Lesson:**  **3.3 Networking Characteristics** |  |  |  | Questioning  Tasks  Exam Question Practice |
| **Lesson:**  **3.4 Connectivity Methods** |  |  |  | Questioning  Tasks  Exam Question Practice |
| **Lesson:**  **3.5 Business Systems** |  |  |  | Questioning  Tasks  Exam 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. | Language  Verbal  Written  Barriers  Interpersonal | * 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. | Questioning  Tasks  Exam 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. | Communication  Features  Benefits  Word Processing  Blog/Vlogs  Instant Messaging | * Students need to already know about the features on Microsoft software such as Word, PowerPoint and Outlook. | Questioning  Tasks  Exam 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. | Personal  Attributes  Respect  Leadership  Determination  Independence | * 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. | Questioning  Tasks  Exam 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. | Presentation  Personal Grooming  Appearance  Attitude | * Students need to already know about dress codes (uniforms) and the reasons for why they are in place. | Questioning  Tasks  Exam 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 skills  Technical  Non-Technical  Network Manager  IT Technician  Programmer  Web Designer  Animator | * Students will already know certain responsibilities of IT technicians and Web Designers. | Questioning  Tasks  Exam 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. | Purpose  Benefits  Limitations  Professional Bodies | * Students will already know that professional development or training is a continuous part of a job role. | Questioning  Tasks  Exam 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. | Benefits  Limitations  Employer  Industry Certification | * Students will already know that there are qualifications other than GCSE and A-Level which individuals can complete to further their careers. | Questioning  Tasks  Exam 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. | Discrimination  Safety  Ethical  Whistle Blowing  Codes of Practice  Operational | * Students will already know about diversity such as gender, disability, sexuality, age and ethnicity and the importance of equality. | Questioning  Tasks  Exam 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 Information  Health and Safety  Legislation  Disaster Planning  Operational  Acceptable Use Policy  Change Management | * Students will already know the importance backing up work. * Students will already know the health and safety risks of using ICT equipment. | Questioning  Tasks  Exam 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. | Threat  Theft  Scam  Trojan  Virus  Hacking  Social Engineering | * Students will already know about viruses, hackers and scammers and the damage and disruption that they can cause. | Questioning  Tasks  Exam 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. | Physical  Security  Privacy  Biometrics  RFID  Tokens | * 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) | Questioning  Tasks  Exam 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. | Threats  Permissions  Passwords  Anti-virus  Firewalls  Encryption | * Students will already know that accounts use usernames and passwords to protect from hackers (unauthorised access). | Questioning  Tasks  Exam 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. | Legislation  Overwrite  Destruction  Electromagnetic Wipe  Degausser | * Students will already know that data and information can still be found on devices if they haven’t been removed properly. | Questioning  Tasks  Exam Question Practice |