SCARBOROUGH UTC
Technical Excellence, Employable Graduates

Half Term	Unit Title	Key Knowledge/ Content to evidence	Essential Skills to acquire (subject & generic)	Link to intent and ethos	Anticipated misconceptions	Links to previous KS	Link to future KS	Opportunity for stretch and high prior attainers	SMSC & British Values	Cultural Capital	Career Link
One	**Unit 4 Computer Networks** LO1 Understand components of networks LO2 Plan computer networks to meet client requirements	This unit is mandatory in the IT Infrastructure Technician specialist pathway in the Level 3 Diploma suite of qualifications due to its relevance in an IT technical environment. Learners will develop an understanding of how computer networks work from the hardware needed to planning and designing a network solution for a given scenario.	The unit supports the development of skills, knowledge and understanding relevant to a technical support or network technician job role. Finding relevant sources of information Referencing sources of information Evaluate sources Develop a line of reasoning through observation and analysis Compare and contrast technical processes Report writing	Learners will develop knowledge and understanding of technical content in this unit through computational approaches by using essential skills they will be able to logically process how to structure and write a report.	APIPA addressing confuses diagnosis of IP connectivity problems The difference between classful and classless addressing in IP The need to use DHCP to manage IP configuration in a small network The difference between TCP and UDP The OSI Model is only of use to network designers and academics The nature of port addressing in TCP	Learners will know computer protocols that govern packet transmission across different types of networks, network topologies, and the TCP/IP network stack.	This unit provides learners with the knowledge and skills that can be applied in the workplace or to continue to study for a Cyber Security degree at university.	Learners will have the opportunity to use network simulation software to practise building a computer network and to configure a network. Learners will learn and use Cisco Packet Tracer software to simulate logical designs of a prosed computer network.	Learners will have the opportunity to further develop their knowledge by learning how the Internet operates globally. What are the ethical, environmental, legal, cultural, and privacy impacts of the Internet? Learners will develop knowledge in digital technologies and the challenges facing legislators in the digital age.	Learners will have the opportunity to discuss the difference between the Internet and the World Wide Web, How was the Internet founded? How does the Internet work? Who owns the Internet?	https://www.gchq-careers.co.uk/ GCHQ Apprenticeships https://www.mi5.gov.uk/careers https://www.sis.gov.uk/explore-careers.html https://www.yhrocu.org.uk/vacancies/ University of Hull Computer Science courses University of York
Two	LO3 Present network solutions to clients LO4 Plan maintenance activities for computer networks	Learners will develop the skills and knowledge in presenting technical information. Learners will gain the knowledge and skills needed to plan and carry out maintenance activities for a computer network.	Researching and identifying relevant sources of information Referencing sources of information Evaluate sources Develop a line of reasoning through observation and analysis Compare and contrast technical processes Report writing	Learners will develop knowledge and understanding of technical content in this unit through computational approaches by using essential skills they will be able to logically process how to plan, create, and deliver a presentation on a network solution to a client.	Network performance testing is not required after user acceptance of the network. Troubleshooting network problems is complicated and requires sophisticated equipment and software. Software updates are a good thing and should always be applied The difference been contiguous and continuous	Learners will know network hardware components, their purpose, and how they work together.	This unit provides learners with the knowledge and skills that can be applied in the workplace or to continue to study for a Cyber Security degree at university.	Learners will have the opportunity to engage in several workshops delivered by GCHQ to further develop skills and knowledge including technical and soft skills.	Learners will have the opportunity to discuss the environmental impacts of technology on society. Has computer technology led to a "throw-away society", with huge waste dumps of unwanted products which are thrown away rather than repaired or upgraded?	Learners will have the opportunity to discuss wireless networking. Several case studies covered smart cities; Dubai, Singapore, London, and New York. What are the benefits to citizens? What are the environmental benefits? What are the risks of implementing citywide wireless technology?	https://nationalcrimeagency.gov.uk/careers/vacancies https://www.gov.uk/apply-apprenticeship
Three	**Unit 18 Computer Hardware** LO1 Understand the components of a computer system LO2 Propose computer systems for identified business requirements	The aim of this unit is to enable you to understand how the components of computer systems work together. You will develop the skills needed to recommend appropriate hardware systems for various purposes. Using the skills developed you will build/upgrade a full computer system with a view to testing and considering preventive maintenance procedures.	Researching and identifying relevant sources of information Referencing sources of information Evaluate sources Develop a line of reasoning through observation and analysis Compare and contrast technical processes Report writing	Learners will develop knowledge and understanding of technical content in this topic through computational approaches by using essential skills they will be able to identify internal computer components and how they function together.	The CPU is the brain of the computer - there is no such notion of the CPU being able to think in a way that could be attributed to a real brain. The CPU can execute complex mathematical operations - CPUs can rarely carry out mathematical operations more complex than simple arithmetic and comparisons. BIOS passwords provide security against access	Learners will know hardware components and how they function together in a computer system. Learners will know how the CPU fetches, decodes, and executes instructions and data from main memory discussing how CPU components are involved in this process.	This unit provides learners with the knowledge and skills that can be applied in the workplace or to continue to study for a Cyber Security degree at university.	Learners will have the opportunity to engage with employer partners to develop skills and knowledge in computer components and participate in technical workshops in computer maintenance activities.	Learners will have the opportunity to discuss the legal and ethical issues of building computers and how to secure them. Computer forensics and how government agencies can trace computers that have been used in criminal activity.	Learners will have the opportunity to discuss computer components and emerging technologies such as cloud computing. What are the environmental impacts of cloud computing?	Birmingham University, Digital Forensics BSc(Hons) Degree Digital Forensics Jobs GCHQ Apprenticeships

Four	LO3 Computer Build LO4 Test and evaluate the functionality of computer systems	Install different hardware components on an identified computer system Implement preventative maintenance requirements for the identified computer system Select and implement benchmarking activities for the identified computer system. Analyse results from benchmarking activities for the identified computer system.	Researching and identifying relevant sources of information Referencing sources of information Evaluate sources Develop a line of reasoning through observation and analysis Compare and contrast technical processes Report writing	Learners will develop knowledge and understanding of technical content in this unit through computational approaches by using essential skills they will be able to logically process how to build a computer and write a report.	External GPU ESD failure Command console is 'old fashioned' Operating system installation includes files for operating all the computer hardware	Learners will know computer components and the factors of computer performance.	This unit provides learners with the knowledge and skills that can be applied in the workplace or to continue to study for a Cyber Security degree at university.	Learners will have the opportunity to choose hardware components based on analysis and justifications to a given scenario. Learners will have the opportunity to learn operating system commands such as Linux.	Learners will have the opportunity to discuss the ethics and the impacts of computers. Computers have become so widespread that we cannot imagine life without them, what impact has this had on society? What effect has the spread of computers had on employment, health, shopping habits, communication? Do we tend to ignore ethical issues in our use of computers?	Learners will have the opportunity to discuss security measures and impacts of computer systems. How secure are wearable technologies? Does the thought of someone tracking your movements without your knowledge worry you?	Leeds Beckett University Cyber Security & Digital Forensics BSc (Hons)