Acle Academy

YEAR 8 – Computer Systems KS3 Computer Science		
Rationale and Context of Unit:	**Core curriculum content:**	**Tier 2 & Tier 3 vocabulary explicitly taught:**
In Year 7, students develop a strong foundation in core computing skills, including effective use of a personal computer, secure login procedures, and navigation of school networks. They gain experience using key digital platforms such as Google Workspace and Microsoft Office, enabling them to communicate, create, and manage work efficiently. Alongside this, students are introduced to binary number systems, essential e-safety principles, and early programming concepts through Micro devices, building their confidence and digital literacy. In Year 8, this unit builds directly on prior learning by deepening students' understanding of how computer systems operate. Students explore the relationship between hardware and software, as well as the role of input and output devices in enabling interaction with computer systems. Their knowledge of number systems is extended to include hexadecimal, alongside further work on binary and denary, strengthening their understanding of how data is represented and processed within computers. Students also progress in their programming skills by learning to write code in Python and applying their knowledge through platforms such as Amazon Turing Lab. Digital safety is reinforced through the EE Phone Smart programme, ensuring students develop responsible and informed use of technology. In addition, students are introduced to electronic components, linking physical computing with software concepts. This unit provides a clear progression from basic digital skills to a more technical and conceptual understanding of computing, preparing students for further study and future pathways in the subject.	**Computer Systems: Hardware and Software** Students will learn about the fundamental components of computer systems, including the difference between hardware and software, and how they work together to perform tasks. **Input and Output Devices** Students will explore a range of input and output devices, understanding their functions and how users interact with computer systems through them. **Number Systems** Students will be introduced to three key number systems: binary (base 2), denary (base 10), and hexadecimal (base 16). They will learn how to interpret and convert between these systems, developing an understanding of how data is represented within computers. **Programming in Python** Students will begin to write code using the Python programming language, developing their ability to create simple programs and apply logical thinking and problem-solving skills. **Digital Safety and Phone Awareness** Students will learn about safe and responsible mobile phone use through the EE Phone Smart platform, gaining an understanding of online risks and how to protect themselves in digital environments. **Coding Platforms** Students will develop their coding skills further through the Amazon Turing Lab platform, providing opportunities to practise and apply programming concepts in an interactive environment. **School Network Navigation**	Binary LAN (Local Area Network) WAN (Wide Area Network) PAN (Personal Area Network) Topology Python Flow Line Terminal Processing Decision

	Students will learn how to effectively use the school network, including accessing shared drives, locating files, and saving their work securely within their personal user areas. **Introduction to Electronic Components** Students will be introduced to basic electronic components, gaining an understanding of how physical computing elements work alongside software to create functional systems.	
Challenge and Support:	**World wide learning/ links to 21st century:**	**Cultural capital/ Industry/ Enrichment:**
Lessons are carefully structured with embedded EDSM descriptors to support clear progression and effective differentiation for all learners. Within each lesson, targeted activities provide appropriate stretch and challenge for higher attaining pupils (HAPs), encouraging them to deepen their understanding and apply their skills in more complex contexts. Literacy is supported through the use of carefully selected reading materials, with dedicated curriculum time allocated for engagement. Pre-prepared PowerPoint resources guide learning and offer regular opportunities for students to read aloud, helping to develop both comprehension and oracy skills. Key subject-specific vocabulary is explicitly taught throughout the unit, with clear definitions and explanations to support understanding, retention, and confident use of technical language. Google Classroom is used as a centralised platform to support learning and is organised consistently in line with other Creative Industries subjects. This familiar structure promotes independence and reduces cognitive load, enabling students to quickly locate lesson materials, homework, assessments, and revision resources. The platform also supports continuity of learning by allowing students to access materials at any time, revisit content, and	This unit equips students with essential knowledge of computer systems, including hardware, software, and data representation, which underpin all modern digital technologies. Understanding how computers process information through binary, denary, and hexadecimal systems enables students to grasp how global digital systems function, from smartphones to cloud computing. These foundational concepts are critical in a world increasingly driven by data, automation, and interconnected technologies. The development of programming skills in Python and the use of platforms such as Amazon Turing Lab reflect current industry practices, where coding and computational thinking are highly valued across a wide range of careers. By learning to design, write, and debug programs, students gain problem-solving skills that are transferable beyond Computer Science, preparing them for future roles in technology, engineering, and other digital industries that are central to the global economy. Digital safety and responsible technology use are vital components of 21st-century learning. Through platforms such as EE PhoneSmart, students develop an awareness of online risks and learn how to protect themselves in an increasingly connected world. Additionally, learning to navigate networks and understanding electronic	This scheme of learning introduces students to a broad range of career pathways within Computer Science, helping them to appreciate the variety of opportunities available within the digital sector. Roles such as concept artist, sound engineer, app developer, and software developer are explored to expand students' understanding of the industry, alongside the qualifications, skills, and experiences required to access these careers. For many learners, access to digital technology outside of school is limited. This unit therefore provides essential and equitable opportunities to develop core digital skills, ensuring all students can build confidence and competence in using technology effectively. In doing so, it supports social mobility by enabling all learners to acquire skills that are increasingly essential in education, employment, and everyday life. Computer Science continues to be an area of significant skills demand both nationally and locally. By developing strong foundational knowledge and practical skills, students are better prepared to progress into a growing industry where digital expertise is highly valued. This enhances their future employability while also supporting the wider economy through innovation and a skilled workforce.

catch up independently. Additional resources, including careers information and curated video content, further enhance engagement and provide opportunities for enrichment beyond the classroom.	components bridges the gap between virtual and physical systems, helping students to recognise how technology operates in real-world contexts and preparing them to be informed, responsible, and capable digital citizens.	
Historical, Social, Moral, Spiritual, Cultural context:	**Cross curricular links/ literacy/numeracy:**	**Common misconceptions:**
The KS3 Computer Science curriculum provides opportunities for students to explore the broader historical, social, moral, spiritual, and cultural implications of computing and digital technology. Through topics such as Google Workspace, Microsoft Office applications, and school network navigation, students develop an understanding of how digital systems have transformed communication, education, and the workplace over time. This highlights the historical development of computing and its growing role in shaping modern society. From a social and moral perspective, e-safety and digital awareness are central to the curriculum. Students learn how to behave responsibly online, with a focus on issues such as cyberbullying, privacy, and respectful communication. This encourages students to consider the impact of their digital actions on others and to develop empathy and ethical awareness when using technology in both personal and academic contexts. The introduction to binary and number systems, alongside micro programming, supports students in understanding the logic and structure behind modern computing. This fosters curiosity and appreciation of how technology functions at a fundamental level, contributing to cultural understanding of the digital world. Together, these elements help students to become responsible, informed, and culturally aware digital citizens.	**Gatsby Benchmark:** https://www.bbc.co.uk/bitesize/articles/zmq3jhv https://www.bbc.co.uk/bitesize/articles/z4jn2sg https://www.bbc.co.uk/bitesize/articles/zjvf2sg **STEAM Ambassadors:** Students will be awarded a STEAM ambassador badges if they have been identified for doing exceptional work either academically or practically within this Design Technology curriculum. **Cross Curricular links:** **Mathematics:** Students develop understanding of number systems including binary, denary, and hexadecimal, strengthening conversion skills and logical reasoning. **Science:** Learners explore electronic components and input/output devices, linking to circuits, energy transfer, and system functionality. **Design and Technology:** Students apply systems thinking by understanding how hardware and software components work together in real-world contexts. **English (Literacy)**: Technical vocabulary, instructions, and algorithm design support clear communication, comprehension, and structured writing. **PSHE / Digital Citizenship:** Students develop awareness of online safety and responsible mobile phone use through the EE Phone Smart platform.	Although students are often referred to as part of the "digital generation," their experience of computers and digital systems in a professional or structured environment is frequently limited. Many learners are familiar with using technology socially, but have not developed a secure understanding of how digital tools are used in workplace or educational settings. As a result, students can hold misconceptions about key concepts in computing, particularly around online safety. This includes an overestimation of the strength and security of simple passwords, as well as a lack of awareness of best practice in protecting personal data and managing online identity. Addressing these misconceptions is a key focus of the curriculum to ensure students develop safe, responsible, and informed digital habits.

Assessment timeline:

Computer Science is delivered as part of a carousel system within the Creative Industries Faculty, alongside Product Design, Food, and Textiles. This structure allows each subject to be taught over a focused period of approximately nine weeks per academic year. Within this timeframe, students engage in a broad range of activities designed to develop both practical and theoretical understanding of Computer Science, ensuring they gain meaningful exposure despite the short delivery window.

Assessment in Computer Science is split equally between two key areas: subject knowledge and employability skills, each marked out of 50. Subject knowledge assessments evaluate students' understanding of design principles, materials, processes, and the ability to apply this knowledge to problem-solving tasks. The employability assessment is bespoke to Computer Science and assesses a range of transferable skills such as creativity, teamwork, time management, and independent thinking—key attributes valued by employers within the creative industries.

All student achievements are logged by teaching staff on the KS3 subject tracking sheet to ensure consistent monitoring of progress across the faculty. In addition, individual achievement scores are recorded on the front of student books, providing a clear and accessible reference for students and parents. The Creative Industries Faculty prides itself on being forward-thinking, consistently integrating the latest technologies to enhance teaching and learning. This aligns with government guidance and supports students in developing digital literacy as part of their broader educational experience.

Subject Knowledge:

Literacy
Software
Hardware
Computer Systems
Python Functions
Online Safety

Exam: 50 marks

Employability Skills: Micro Bits

The employability component of this scheme of learning is a practical assessment worth 50 marks. In this task, students will programme a FarmBot using the Turing Lab as a learning platform. The aim is to develop a fully operational FarmBot capable of carrying out agricultural processes such as soil preparation, planting, and harvesting crops. This reflects an active area of research and development within industry, including organisations such as John Deere. The task helps raise students' awareness of how automation can help address current skills shortages in the workforce. Assessment will be based on several areas, including robotic movement, code development, completion of Python-based challenges, and debugging proficiency.

Practical: 50 marks

Home learning

Home learning in Computer Science is set in accordance with the subject's home learning schedule, which is available through the Acle Academy website. These tasks are carefully

designed to reinforce both the subject knowledge and employability skills assessment areas that are implemented into the classroom. By supporting the curriculum in this way, students can consolidate their understanding of key concepts and continue developing transferable skills such as problem-solving, creativity, and time management beyond the classroom setting.

To support independent learning, subject-specific YouTube playlists have been created and curated to align directly with classroom content. These playlists include a range of resources, such as instructional videos, practical demonstrations, and relevant theory-based content. Where appropriate, audio books or audio versions of set literacy texts are also included, allowing students to access content in a format that suits different learning styles. This approach encourages students to take ownership of their learning while making use of high-quality digital resources that complement and enhance their in-school experience.

Feedback

Feedback plays a vital role in the delivery of practical subjects within the carousel system, including Computer Science. Due to the hands-on nature of the curriculum, verbal feedback is an essential tool for effective teaching and learning. This ongoing, in-the-moment dialogue allows teachers to guide students through processes, correct errors as they occur, and reinforce good practice. Evidence of this approach can be seen in focused, purposeful classroom environments where students are actively engaged and responsive to teacher input.

To further support learning, structured strategies such as WWW (What Went Well) and WAGOLL (What A Good One Looks Like) are embedded within lessons. These strategies help students to reflect on their own work, recognise strengths, and understand expectations through high-quality exemplars. Peer and self-assessment opportunities are often built into practical tasks, enabling students to become more independent and reflective learners.

To complete the feedback loop, students review their Subject Knowledge assessments with reference to personalised feedback provided via their school email accounts. This process encourages students to identify and address any misconceptions, reinforcing personal responsibility and promoting continuous improvement. By reviewing assessment outcomes and targeted feedback, students can take clear, informed steps to improve their understanding and performance in future tasks.