Computer Science

Subject Leader: Mrs S Thomas   sthomas1@taptonschool.co.uk

Curriculum Intent:
To give all our students the opportunity to learn 'powerful knowledge' through a curriculum with computational thinking at its core. Our curriculum is designed with a balance of the three strands of Computer Science, Information Technology and Digital Literacy with the aim of enabling all our students to be active participants in an increasingly digital society.

	Core Knowledge	Procedural Knowledge
Autumn	**Topics:** Physical computing with micro:bits. Computational Thinking with Bebras. Programming with Python Intro – Text based Programming.	**Students will:** List the micro:bit's input and output devices. Identify how instructions are stored and executed within a computer system such as the micro:bit. Use sequence, selection, and repetition in programs. Work with variables and various forms of input and output on the micro:bit. Use development environments to write, execute, and debug programmes for the micro:bit. Apply decomposition, abstraction and algorithmic thinking to help solve problems. Write simple Python programs that display messages, assign values to variables, and receive keyboard input. Use simple arithmetic expressions in assignment statements to calculate values.
Spring	**Topics:** Programming with Python Intro – Text based Programming. Careers: The future of jobs 1. Data Representation: Binary and Text.	**Students will:** Use relational operators to form logical expressions. Use binary and multi-branch selection. Use debugging techniques to identify errors in code. Identify diversity and careers in Computing and Technology. Identify the potential paths into roles in the technology sector. Understand how data of various types (including text) can be represented and manipulated digitally, in the form of binary digits. Explain what binary digits (bits) are and articulate why in computing we use binary to represent data. Measure the size or length of a sequence of bits as the number of binary digits. Carry out simple operations on binary numbers Conversion between binary and decimal.

	Topics:	Students will:
Summer	Computer Systems 3: Boolean Logic & Circuits. Cybersecurity.	Use simple Boolean logic (for example, AND, OR and NOT) to set conditions, create circuits. Be able to write truth tables for common logic gates. Identify the difference between data and information. Identify how different types of malware cause problems for computer systems and identify strategies to reduce malware and brute force attacks. Explain the need for the Computer Misuse Act and GDPR. Question how malicious bots can have an impact on societal issues. Implement strategies to minimise the risk of data being compromised.

Homework:
Homework will be set on Satchel:One for every six hours taught.
There will be a terminology revision and computer quiz each half term.

Assessment:
Student learning will be assessed through the use of progress tasks in lessons.
There will also be summative end of topic multiple choice quizzes.
TSAT: Assessment November
Students will be assessed on Topics from Year 7 and from Year 8 Autumn term.
The assessment will be online and last for 40 minutes. The format will be a mixture of multi-choice questions and text-based questions. Students will complete the assessment in their Computer Science class. A revision guide will be available on Satchel:One.
TSAT: Assessment May
Students will be assessed on Topics from Year 7 and from Year 8 Autumn term and Spring term.
The assessment will be online and last for 40 minutes. The format will be a mixture of multi-choice questions and text-based questions. Students will complete the assessment in their Computer Science class. A revision guide will be available on Satchel:One.

Links to Personal Development:
Enabling Students to recognise online risks to their own wellbeing. Students to recognise the dangers of inappropriate use of mobile technology and social media.
Build students confidence, resilience, understanding of ethics, cultural capital and knowledge.
Prepare learners for future success in education, employment and training, so that they can keep themselves mentally healthy and be economically successful.
Promote inclusion: Computer Science opportunities are for everyone

How is my knowledge further developed in Year 9?
Computer Science in Year 9 will continue to help you understand and apply the fundamental principles and concepts of Computer Science, including abstraction, decomposition, logic, algorithms, and data representation.
You will develop your programming skills further using micro:bits with Python. You will start to look at computer systems in greater depth, look at the role, impact and ethics of artificial intelligence, machine learning and data science in our society.
You will continue to use technology safely, respectfully, responsibly, and securely. Developing your knowledge of staying safe online through developing your understanding of cybersecurity.
You will continue to develop your information technology skills and digital literacy by using a range of platforms, tools and technologies creatively and appropriately.