Computer Science

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

Curriculum Intent: To give our students the opportunity to learn 'powerful knowledge' through a curriculum with computational thinking at its core. To develop our students as Computer Scientists; building the capability, ethical awareness, resilience, knowledge and skills required to become creative problem solvers in a digital world. Practical coding is central to our approach and students will build their skills to enable the application of computing principles such as algorithms, data representation and data structures.

Core Knowledge	Procedural Knowledge
Topics: Systems architecture. Memory and storage. Computer networks, connections and protocols & Network security. Algorithms. Programming fundamentals. Programming languages and Integrated Development. Environments. Ethical, legal, cultural and environmental impacts of digital technology. Systems software. Producing robust programs. Boolean logic.	**Students will:** Be able to describe the components that make up digital systems, how they work and how they communicate with one another and with other systems e.g. articulate the stage of the Fetch: Decode Cycle in the CPU. Apply mathematical skills e.g. Converting in both directions between binary and decimal. Apply the fundamental principles and concepts of Computer Science, including abstraction, decomposition, logic, algorithms, and data representation e.g. Take a real word problem and model it by using abstraction and breaking the problem down using decomposition. Be able to systematically approach problem solving and algorithm creation representing those algorithms using pseudo-code and flowcharts e.g. Designing a flowchart for a program. Writing, correcting, testing and interpreting the function of algorithms that solve problems using: Input/output, variables, sequence and selection, local variables, mathematical and logical operations. Be able to use SQL to search for data in databases. The capacity to think creatively, innovatively, analytically, logically and critically. Effective use of tools — Use software and a range of hardware devices to support computing work. Be able to articulate the impacts of digital technology to the individual and to wider society.

Homework:
Homework is set once per week by each teacher.
Expect to spend up to 45 minutes on your homework in total.
All homework tasks will be set via Satchel:One.
Typical homework will include but is not limited to:
Cornell notes made using online tutorials (pre-learning).
MCQ review questions to consolidate key ideas from the A Level course through Smart Revise and Isaac Computing
Wider reading tasks to broaden your Computer Science knowledge.
Revision for end of topic assessments and main assessment points.
Practice exam questions to develop exam technique.
Learning keywords definitions and spellings which may take the form of online MCQ Quizzes or be embedded into the workbooks and Cornell notes.

Assessment:
Teacher questioning in lessons.
Regular review questions at the beginning of lessons to check on prior learning and challenge misconceptions
Regular MCQ quizzes to check on prior learning and challenge misconceptions.
Regular exam question practice with either whole class or individual feedback embedded into workbooks.

Review of workbooks to assess understanding of the learning.

TSAT Assessments: Formal assessments which more broadly assess the curriculum including several topics in one assessment paper.

Y10 October 2023 TSAT Assessment – Class Based

Students will be assessed on some GCSE foundation Topics from Y8 and Y9. In addition, topics from both components taught in GCSE Computer Science in early Autumn term in Y10. The assessment will be in class. A guide to the assessment will be on SatchelOne.com.

Y10 April 2024 TSAT Trial Exam in Exam Location

Students will be assessed on Topics from both components taught in GCSE Computer Science in the Autumn and Spring term in Y10. A guide to the assessment will be on SatchelOne.com.

Y11 October 2023 TSAT Assessment – Class Based

Students will be assessed on some GCSE foundation Topics from Y8 and Y9. In addition, topics from both components taught in GCSE Computer Science in early Autumn term in Y10. The assessment will be in class. A guide to the assessment will be on SatchelOne.com.

Y11 February 2024 TSAT Trial Exam in Exam Location

Students will be assessed on Topics from both components taught in GCSE Computer Science in Y10 and Autumn and Spring term in Y11. A guide to the assessment will be on SatchelOne.com.

Links to Personal Development:

GCSE Computer Science can open doors to various career opportunities in data science, web development, product management, engineering, software development and communications or prepare students for further education at A Level, BTEC etc. Computer Scientists develop significant transferable skills. Examples of careers in Computer Science and careers enhanced by transferable skills are discussed in lessons.

We celebrate diversity in tech and are vocal about the value of ALL our students seeing the opportunities in Computer Science and Technology sectors.

We work with local employers such as ARM, The DJRFF foundation and encourage our students to think about the range of careers that Computer Science can lead to.

In particular, the study of Computer Science builds the resilience of students, solving problems computationally and coding both of which are hard, requiring sustained practice.

How is my knowledge developed further at Key Stage Five?

The content taught at GCSE facilitates students to undertake the A Level course with the necessary base knowledge to meet assessment requirements.