Computer Science

Subject Leader: Mrs S Thomas

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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:	Students will:
	Systems architecture	Be able to describe the components that
	Memory and storage	make up digital systems, how they work
	Computer networks, connections and	and now they communicate with one
	Computer networks, connections and	example: articulate the stage of the
	protocols & Network security	Fetch: Decode Cycle in the CPU
	Algorithms	Apply mathematical skills. For example:
	Programming fundamentals	Converting in both directions between binary and decimal
	Programming languages and Integrated	Apply the fundamental principles and
	Development Environments	concepts of Computer Science, including abstraction, decomposition, logic,
	Ethical, legal, cultural and environmental	algorithms, and data representation. For
	impacts of digital technology	example: Take a real word problem and
	Computer networks, connections and	breaking the problem down using
	protocols & Network security	decomposition
	' Systems software	Be able to systematically approach
		representing those algorithms using
	Producing robust programs	pseudo-code and flowcharts. For
	Boolean logic	example: 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
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Hom	ework:	

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 Year 8 and 9. In addition Topics from both components taught in GCSE Computer Science in early Autumn term in Yr 10. 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 Yr 10. 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 Year 8 and 9. In addition Topics from both components taught in GCSE Computer Science in early Autumn term in Yr 10. 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 Yr 11. 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 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 sector.

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 is hard and coding is hard requiring sustained practice.

How is my knowledge developed further at Key Stage Five (Y12 and Y13)?

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