

CURRICULUM INTENT

We aim to develop computational thinking and reasoning to allow our students to strategically solve problems and apply their Computing knowledge in the real world.

The Computer Science curriculum at Avanti Fields aims to develop the knowledge, skills, and awareness of the various aspects of the subject. Our students are ambitious and ready to learn, and Computer Science is a relatively new and rapidly developing subject area. Students are encouraged to analyse and reason logically and present logical arguments to allow them to apply their knowledge of the subject to solve problems. Throughout their time at Avanti Fields, students will deepen their understanding of Computer Science and appreciate its contribution to – and impacts upon - society.

Students will appreciate that studying Computer Science will give them the knowledge and skills to approach and solve a wide range of problems. It will also help to install thoughtful and responsible behaviour in the use of technology. Finally, students will develop knowledge required for further academic study of Computer Science and skills required in the workplace.

THE AVANTI WAY

EDUCATIONAL EXCELLENCE



CHARACTER FORMATION



SPIRITUAL INSIGHT



In Computer Science we aim to develop ideas concerned with computational thinking. Students are encouraged to become reflective practitioners and critical thinkers. Wherever possible, Computer Science is linked to other subject areas e.g., History in Year 8 with the work of Alan Turing and Bletchley Park in WW2.

The Computer Science curriculum provides important opportunities to develop the character of students. Students study aspects of online safety and online behaviour in all year groups, providing opportunities for students to make informed decisions and choices. Students take ownership of their own learning experience to further develop their understanding, which requires self-discipline, honesty, and integrity.

Computer Science is defined by rules, relationships, and patterns. Technology can be seen as both beneficial and harmful to humankind and the environment, for example. Students are taught to consider ethical issues surrounding the use of computers and technology.

PROGRAMME OF STUDY

Students will be provided opportunities to develop the following knowledge, skills and understanding in Computer Science:

- Online Safety
- Programming skills
- Use of Computational equipment
- Problem solving
- Designing and refining algorithms
- Pattern recognition
- Decomposition
- Logical reasoning
- Data Representation
- Spreadsheet and database skills
- Computer Hardware
- App development
- Computer Networks

TERM	YEAR 7	YEAR 8	YEAR 9
AUTUMN 1	Rules for Computer Rooms Online Safety File Organisation Skills	Artificial Intelligence The Turing Test Introduction to BYOB	Python Programming (IDE) Variables Programming Constructs
AUTUMN 2	An Introduction to Scratch Programming The 3 Basic Programming Constructs Variables Debugging	BYOB Programming Decomposition Procedures The Use of Parameters	Further Python Programming IF statements; Loops; Procedures Text-based language Algorithmic Thinking Text Adventure Game Development
SPRING 1	Further Scratch Programming Algorithms Pattern Recognition	Cryptography Encryption and Decryption Historical and Modern Applications of Cryptography The Turing Test Artificial Intelligence	Office Skills for Business Gym Scenario The Marketing Mix Spreadsheets Email for Business
SPRING 2	Computer Fundamentals Hardware and Software Input and Output Devices Introduction to Networks	Online Safety and Behaviour Introduction to Data Representation: Number Systems Binary Notation / Denary / Hex and Conversions	Office Skills for Business Databases Networks
SUMMER 1	Spreadsheet and Database Skills	Data Representation: Binary Images Character Sets: ASCII	Spreadsheet Applications Online Safety and Behaviour
SUMMER 2	Microbits	App Development An Introduction to Python (Turtle)	App Development

ASSESSMENT AND FEEDBACK

Students are assessed regularly in Computer Science through a combination of formative and summative assessments. Students receive feedback after each assessment, following the whole school 'Strengths, Improvements, and Actions' (SIA) policy.

Students reflect on their performance in assessments and act upon the feedback received. Certain aspects of Computer Science are revisited in each year group e.g., programming skills, spreadsheet skills, online safety and improve. This provides opportunities for students to reflect and improve and make further progress in their knowledge, skills and understanding in the same subject area.

Students have teacher support in class and at break-time and lunchtime, as well as support through digital platforms such as Google Classrooms and the school email system.

FORMATIVE ASSESSMENT: Computational skills and knowledge are assessed regularly through low stakes testing in lessons which have a focus on both current content and recalling previous knowledge and skills.

SUMMATIVE ASSEMENT: There are several summative assessment tests per year. The purpose is to confirm the track point of the student and to promote longer term recall by testing earlier topics and to meet the demands of a linear course.

SUPPORT AND GUIDANCE

- 1) Use **BBC Bitesize:** <https://www.bbc.com/bitesize> to learn the key concepts, try quizzes and watch video clips.
- 2) Use the **resources in Google Classrooms Computer Science** (there is a separate "room" for each year group) to aid with explanations and further practice.
- 3) Regularly **review** classwork and **revise** in small chunks as this is much more effective rather than leaving it to the last minute before assessments and exams.



EXTRA-CURRICULAR OPPORTUNITIES

The extracurricular provision has been developed to include an after school Computing Club starting in the Spring Term. It is hoped that we can engage students with Minecraft Educational Edition and other challenges and projects.

In future, students will have the opportunity to engage in events and competitions, including Business-related events. Students and parents will be informed of all opportunities as and when they are organised.

Building cultural capital:

Online Safety continues to be an area of utmost importance for students, parents and staff. Students study issues regarding online safety within Computer Science lessons, but also within the wider life of the school including form time activities and Safer Internet Day each year in February. Parents are provided with regular topical updates on a variety of online safety issues via the school website.

The Subject Leader delivered an assembly on the subject of Black Friday and Cyber Monday. This was seen as an opportunity to explain the ideas and history behind these events and how they relate to our subject in terms of both Computer Science and Business Studies.

Students are invited to join the Ideas Club. This is a cross-curricular project focussed on Science and Computer Science, which students can complete challenges online to earn badges in a scheme similar to the Duke of Edinburgh Award.