# CURRICULUM PLAN

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| **SUBJECT** | **COMPUTING** |

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| **OVERVIEW** | We believe that computing is an essential part of the national curriculum. Computing is an integral part of modern day life and therefore provides a wealth of learning opportunities, explicitly within computing and also across other curriculum subjects.

Through the study of computing, children are able to develop a wide range of fundamental skills, knowledge and understanding that they will need for the rest of their lives.  In this modern era, technology is essential to our daily lives, at home and at work.

Our Computing curriculum is intended to develop students' understanding of the principles of computer science and their ability to apply computational thinking to problem solving. We are committed to improving our young people's understanding of subject knowledge and of the role that computing plays in everyday life.

The national curriculum defines three clear aspects of the computing curriculum: Computer Science (CS), Information Technology (IT) and Digital Literacy (DL). Students will be given the opportunity to develop their knowledge and understanding in each area as they progress from ks2 into KS3 and beyond.

The study of Computing is not just the nurturing of practical ability, but is a subject which promotes independent research, evaluation and risk taking, all of which will be useful throughout their lives. 'Computational Thinking' is a skill that children must be taught in order to provide them with essential knowledge and skills that will enable them to participate effectively in the digital world.

We recognise that some of our students have a particular interest in this area of the curriculum and have launched a Computing Club to develop students who wish to learn more.

At All Saints, we use the 'Teach Computing' scheme of work created by NCCE (the National Centre for Computing Education) in order to achieve the aims of the national curriculum. We are also using Google for Education and use the range of software available to support and promote collaborative working with pupils. The scheme of work was selected due to the way in which the scheme focuses on practical applications of software and technical understanding as well as embracing our Google Chromebook devices as the foundation to our teaching tools. It is our first year following the scheme, therefore we expect 2022/23 to be a year where the NCCE units will be adapted as they are taught to match the needs of the All Saints students and the technology available in school.

We have also shown our commitment to protecting our pupils online by working with National Online Safety to provide resources for all students, staff,  parents and carers. |

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| | National Online Safety's mission is to make the internet a safer place for children. They aim to do this by equipping school staff, parents and children with the knowledge they need to understand online dangers and how best to react should an incident arise. Age-appropriate lessons are taught in all year groups in a range of internet safety topics through discrete computing lessons and the PSHE curriculum. Staff are assigned CPD activities to match the needs of the year groups they work with. Targeted resources are shared with parents and carers.<br><br>Plans are also being put in place to educate students about the benefits and potential dangers of the growth of AI, both in education and in modern life generally. |
| **Key Stage 2** | At Key Stage 2, students follow a **three** year rolling programme to introduce them to the key elements of Computing.  Lessons are planned from the NCCE scheme above, using the National Curriculum as a guideline and adapted to match our students' needs and the IT equipment available to us.<br><br>We are currently on the **first** year of the programme (in 2024/25):<br><br>Students are taught the following units :-<br><br><u>(Programme) Year 1</u><br><br>● The internet<br>● Video production<br>● Repetition in shapes<br>● Data logging<br>● Photo editing<br>● Repetition in games<br><br><u>(Programme) Year 2</u><br><br>● Systems and searching<br>● Audio production<br>● Selection in physical computing<br>● Flat-file databases<br>● Introduction to vector graphics<br>● Selection in quizzes<br><br><u>(Programme) Year 3</u><br><br>● Communication and collaboration<br>● Webpage creation<br>● Variables in games<br>● Introduction to spreadsheets<br>● 3D modelling<br>● Sensing movement |
| **KEY STAGE 3** | At Key Stage 3, the curriculum allows young people to learn:<br><br>• Web coding – HTML, CSS<br>• Programming - Scratch, Bee-Bot<br>• Problem solving, Algorithms<br>• Binary |

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|  | • E Safety<br>• Cloud Computing<br><br>Year 7<br><br>Students in Year 7 are taught the following units:<br><br>● Clear messaging in digital media<br>● Programming essentials in Scratch - part I<br>● Using media - Gaining support for a cause<br>● Networks - from semaphores to the internet<br>● Programming essentials in Scratch - part II<br>● Modelling data using spreadsheets<br><br>Year 8<br><br>Students in Year 8 are taught the following units:<br><br>● Computing Systems and Network - The Internet<br>● Representations - from clay to silicon<br>● Developing Scratch skills<br>● Media - Vector graphics<br>● Layers of computing systems<br>● Programming Microbits (Physical Computing)<br><br>Year 9<br><br>Students in Year 9 are taught the following units:<br><br>● Python programming with sequences of data<br>● Media - Animations<br>● Data science<br>● Representations - going audiovisual<br>● Introduction to cybersecurity<br>● Developing physical computing projects<br><br>Year 9 learn about the History of Computing in their Hidden Figures English and History units.<br><br>Whole School<br><br>There is also a digital element to the Art curriculum and the Music curriculum across KS2 and KS3.<br><br>Use of chromebooks is embedded throughout all curriculum areas. |
| **KEY STAGE 4** | The subject content of the specification combines knowledge and understanding of the principles of computer science with practical problem solving and programming skills.<br>1. Problem solving<br>2. Programming |

3. Data
4. Computers
5. Communication and the internet
6. The bigger picture

Students must have the opportunity to study aspects of information technology and computer science at sufficient depth to allow them to progress to higher levels of study or to a professional career.

All students should be taught to:
- develop their capability, creativity and knowledge in computer science, digital media and information technology
- develop and apply their analytic, problem-solving, design, and computational thinking skills
- understand how changes in technology affect safety, including new ways to protect their online privacy and identity, and how to identify and report a range of concerns.

The GCSE in Computer Science has three assessment components.
Overview Summary of assessment
**Component 1** (40% 1 hour and 40 minutes)
Principles of Computer Science All Topics Examination Multiple choice, short-open, extended-open and open response questions
**Component 2** (40% 2 hours)
Application of Computational Thinking focuses mainly on Topics 1 and 2, but may also draw on content from the other four topics, scenario-based examination, short, extended and open response questions
**Component 3** (20% 20 hours)
Project A program that is designed, implemented, tested, plus a written report Non-examined assessment A levels-based mark scheme, with separate grids for each of the four stages of development
**Functional Skill ICT** Word, Power Point, Excel, File Management, Password, Internet Security