

Year 6 – end of Primary	Year 7	Year 8	Year 9	Year 10	Year 11	School Leavers at 16	Year 12	Year 13	School Leavers at 18
<p>♣ Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</p> <p>♣ Use sequence, selection, and repetition in programs; work with variables and various forms of input and output</p> <p>♣ Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</p> <p>♣ Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration</p> <p>♣ Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</p> <p>♣ Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing,</p>	<p>7.1 introduction to Computer Science</p> <p>Students will be taught on how to logon on for the first time, change password, create folders on local drive and on OneDrive, how to use educational websites such as Firefly, Bedrock, Microsoft Office 360 etc. Logon on to Diagnostic Questions and complete Baseline test</p> <p>7.2 Digital Devices</p> <p>Understand the difference between analogue and digital devices. Learn how different input and output devices are used with a computer. Students will be exploring sensors and will be introduced to binary digital data.</p> <p>7.3 Databases</p> <p>Exploring the need for Databases and using Microsoft Access to create, edit, modify and manipulate a database.</p> <p>7.4 Programming with Scratch</p> <p>Introduction to programming using Scratch. Scratch is a block-based visual programming language</p> <p>7.5 Online Safety</p> <p>Being safe online means individuals are</p>	<p>8.1 Inside a computer</p> <p>Consolidate their learning on physical components that make up a computer system. Exploring inside a computer (internal components), external components, storage devices, cloud storage and peripheral devices including input output and sensors.</p> <p>8.2 Web Development with Online Safety</p> <p>HTML is the standard markup language for creating web pages. This unit will give students the opportunity to understand HTML, be able to program using HTML code.</p> <p>8.3 Networking</p> <p>Computer networking refers to interconnected computing devices that can exchange data and share resources with each other.</p> <p>8.4 Introduction to Programming</p> <p>Students will be exposed to the basics of programming and programming constructs; they will be able to explain what programming is and its importance, gain knowledge of programming uses in the real world.</p>	<p>9.1 Algorithms</p> <p>Algorithms are step-by-step procedures designed to solve specific problems and perform tasks efficiently in the realm of computer science and mathematics. These powerful sets of instructions form the backbone of modern technology and govern everything from web searches to artificial intelligence.</p> <p>9.2 Cyber Security & AI</p> <p>Cyber security is how individuals and organisations reduce the risk of cyber-attack. Cyber security's core function is to protect the devices we all use (smartphones, laptops, tablets and computers), and the services we access - both online and at work - from theft or damage.</p> <p>AI-powered solutions can sift through vast amounts of data to identify abnormal behaviour and detect malicious activity, such as a new zero-day attack. AI can also automate many security processes, such as patch management, making staying on top of your cyber security needs easier.</p> <p>9.3 Data Representation</p> <p>Data Representation refers to the form in</p>	<p>OCR GCSE CS:</p> <p>Component 02 – Computational Thinking, Algorithms and Programming</p> <p>Unit 7: Programming</p> <p>🔗 Programming basics 🔗 Casting, operators, constant and variables, Boolean Logic 🔗 Random Number Generator, Arrays, File Handling, Sub Programs,</p> <p>Unit 6: Algorithms</p> <p>🔗 Computational Thinking Pseudocode & 🔗 Flowcharts 🔗 Searching and Sorting Algorithms</p> <p>Unit 8: Logic & Languages</p> <p>🔗</p> <p>NEA: Non-Examined Controlled Assessment (Programming Project)</p>	<p>OCR GCSE CS:</p> <p>NEA: Non-Examined Controlled Assessment (Programming Project)</p> <p>Unit 1: System Architecture</p> <p>🔗 CPU and FDE 🔗 Memory 🔗 Storage</p> <p>Unit 2: Data Representation</p> <p>🔗 Units, Numbering systems 🔗 Characters 🔗 Images 🔗 Sounds 🔗 Compression</p> <p>Unit 3: Networks</p> <p>🔗 LAN, WAN 🔗 Hardware 🔗 Client Server and Peer-to-Peer 🔗 Topologies 🔗 Protocols 🔗 Internet</p> <p>Unit 4: Network Security & System Software</p> <p>Unit 5: Impact of Digital Technology</p> <p>🔗 Ethical & Cultural Issues</p>	<p>Pupils may take up Computer Science as an A level or opt to do a vocational IT technical course, which has the equivalence to A levels.</p> <p>If students do not take up any of these options, they still have the computational knowledge and understanding to solve complex problems. These transferable skills can be used in any field, allowing students to think out of the box and break complex problems into smaller manageable tasks.</p> <p>The core Programming principles and Computing Architecture allow students to deploy these skills in any IT sector or related IT sector for employment.</p>	<p>OCR CS – A Level:</p> <p>Paper 1: Computing Principles</p> <ol style="list-style-type: none"> Components of a computer and their uses System Software System Development Exchanging Data Network Security and threats Data Types Data Structures Boolean Algebra Legal and Cultural Issues <p>Paper 2: Algorithms & Problem Solving</p> <ol style="list-style-type: none"> Computational Thinking Programming Techniques Algorithms <p>OCR IT Technical (single / double)</p> <ol style="list-style-type: none"> Fundamental principles of IT Global Information Cyber Security Computer Networks IT Technical Support 	<p>OCR CS –A Level</p> <p><i>* Each topic is built upon from year 12 content and difficulty increased with more depth:</i></p> <p>Paper 1: Computing Principles</p> <ol style="list-style-type: none"> Components of a computer and their uses System Software System Development Exchanging Data Network Security and threats Data Types Data Structures Boolean Algebra Legal and Cultural Issues <p>Paper 2: Algorithms & Problem Solving</p> <ol style="list-style-type: none"> Computational Thinking Programming Techniques Algorithms <p>Coursework</p> <p>Programming Project</p> <p>OCR IT Technical (single/double)</p> <ol style="list-style-type: none"> Project Management 	<p>Most of our students tend to go to university and study CS or CS combined with another field. In some cases, they have gone directly into employment/ Apprenticeship, such as IT technicians in various organisations.</p> <p>Skills & knowledge gained in this field is sort after and in demand, whether being a programming/ Developer to applying CS knowledge gained in their alternative degree (maths, engineering, Architecture etc...)</p>

<p>evaluating and presenting data and information</p> <p>♣ Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</p>	<p>protecting themselves and others from online harms and risks which may jeopardise their personal information, lead to unsafe communications or even effect their mental health and well-beings.</p> <p>7.6 BBC Micro:bit</p> <p>BBC Micro:bit is an award-winning programmable device that allows students to get hands-on with coding and digital making.</p>	<p>Understand what pseudo code and flow charts are.</p> <p>8.5 JavaScript</p> <p>This unit will expose students to programming in JavaScript – this includes learning the various principles in programming.</p> <p>8.6 MIT APP Inventor</p> <p>MIT App Inventor is an intuitive, visual programming environment that allows everyone even children to build fully functional apps for smartphones and tablets.</p> <p>8.7 Robotic</p> <p>Robotics is a branch of engineering and computer science that involves the conception, design, manufacture and operation of robots. The objective of the robotics field is to create intelligent machines that can assist humans in a variety of ways.</p>	<p>which data is stored, processed, and transmitted. Devices such as smartphones, iPods, and computers store data in digital formats that can be handled by electronic circuitry.</p> <p>9.4 Advanced Networking</p> <p>This unit aims to provide students with the knowledge and critical understanding of the architectures and functionality of current and future communication infrastructures.</p> <p>9.5 Programming in Python</p> <p>Python is an interpreted, object-orientated, high-level programming language with dynamic semantics</p> <p>9.6 Ethics in Computer Science</p> <p>Computer ethics is the set of commonly agreed principles that govern the use of computers. Like ethics more generally, computer ethics is essentially a set of philosophical guidelines or moral standards that aim to influence behaviour and prevent harm.</p>	<p>Environmental Issues</p> <p>Computer Legislation</p> <p>Open Source and Proprietary software</p>				<p>7. Mobile Technology</p> <p>8. Development of smarter planet</p> <p>9. Internet of everything</p> <p>10. Computer Systems (Hardware)</p> <p>11. Computer Systems (Software)</p>	
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Computer Science