

Deyes High School Curriculum Rationale

ICT & Computer Science

Overarching curriculum intent for ICT & Computer Science

- The aim for the ICT and Computer Science Faculty is to develop, over time, an environment that ensures that pupils become digitally literate – through embedding skills and developing ideas through information and communication technology at a level that pupils can access employment and participate responsibly in the digital world.
- Stimulate and motivate learners in understanding Computational Thinking, Creativity and the basics of programming and to use this knowledge to create digital systems for a given purpose.
- Ensure that students use Information Technology and Computer Science to create programs, systems, and a range of digital content.
- Ensure that students can understand the global concept of Computer Science and ICT and that working remotely will become the new normal.

KS3	Content Taught	Rationale
YEAR 7	<ul style="list-style-type: none"> • E-Safety Digital Footprint. • Micro: Bit. • Binary and Networks and Understanding Computers. • Programming Python Turtle. • Database Top Trumps. 	<p>Students are initially given a baseline test and then complete several word processing tasks to assess their skill level from KS2. We introduce e-safety to ensure all students know how to stay safe online. We highlight our school network rules and regulations.</p> <p>They are given an introduction to programming using both the Microbit and Python Programming Language to increase their</p>

	<ul style="list-style-type: none"> • Computer Graphics – House Style, Trade Magazines. 	<p>understanding of algorithms and computational thinking. All further units link to Computer Science so students are given a wide selection of skills and knowledge.</p>
YEAR 8	<ul style="list-style-type: none"> • Photoshop and Fireworks. • Spreadsheets – Formatting, sum, formulas, spinners, conditional formatting, VLOOKUP, list box, if statements. • Flowol Computer Systems. • System Software – Operating Systems – Application Software. • Security, Information and the internet. • Information, Reliability and Bias. 	<p>Students are introduced to new software applications that are required for all KS4 courses. We consider the importance of the target audience and purpose when designing and creating applications.</p> <p>We also build on Computer Science knowledge by revisiting programming elements and cyber security. This structure leads students into more project-based work as they continue into Year 9 and KS4.</p>
YEAR 9	<p>High</p> <ul style="list-style-type: none"> • VFestival - Dreamweaver • VFestival - Spreadsheets • Netflix Database – Tables, Data types and Forms • Netflix Database – Queries and Reports • Programming Python • User Interfaces • The Online World <p>Lower</p> <ul style="list-style-type: none"> • VFestival - Dreamweaver • VFestival - Spreadsheets • Netflix Database – Tables, Data types and Forms • Programming Python 	<p>In Year 9 the rationale behind the curriculum is to introduce project-based work. This is designed to use the Computer Science and ICT multimedia skills learned over the previous 2 years and combine them to create a whole project based on a specific scenario. Students will be taught how to be more analytical to identify and understand what a client's requirements are.</p> <p>Students will then need to give reasons and explanations as to why they have fulfilled the specified criteria. The work completed in KS3 and specifically Year 9 will allow the students to transition seamlessly into the subject options chosen in KS4 – Computer Science and Digital Information Technology.</p>

	<ul style="list-style-type: none"> • User Interfaces • Flash Project • The Online World 	
<p>KS4</p>	<p>WHAT UNITS/CONTENT ARE TAUGHT IN EACH YEAR?</p> <p>Year 10 and Year 11 –</p> <p>BTEC Level 2 Tech Award in Digital Information Technology</p> <p>The UK is a world leader in the digital industries, such as in the creation of visual effects for films and computer games. We need to improve the UK’s capability for technical innovation and creativity in all areas. The digital sector is a major source of employment in the UK, with 1.46 million people working in digital companies and around 45,000 digital jobs advertised at any one time. Most jobs in the UK today require employees to have a good level of digital literacy.</p> <p>The course gives the opportunity to develop IT-specific <i>knowledge</i> and <i>skills</i> that will be essential for employment and further education. You will develop practical computer skills and gain experience of all the key roles in an IT project Team.</p>	<p>Year 10</p> <p>Component 1. Creating a User Interface. Plan, design and create a user interface - Practical Coursework (30%).</p> <p>Students are given a client brief to design, deliver and deploy an Interactive User Interface Kiosk for an Events Stadium using appropriate software.</p> <p>The User Interface Kiosk should display information on different pages of the facilities on offer at the stadium and the UI features should allow all types of users to be able to interact with it.</p> <p>Year 10 & Year 11</p> <p>Component 2. Creating a Data Dashboard Plan, design and create a data dashboard - Practical Coursework (30%).</p> <p>Students are given a client brief to design, deliver and deploy a ‘Data Dashboard’. The student’s will be given a set of ‘raw data’ that has been gathered from various sources.</p>

	<p>Year 10 & 11 – OCR Computer Science</p> <p>A modern course for a modern world that has real relevance today. The course will give you in-depth understanding of how computer technology works and a look at what goes on “behind the scenes” of the hardware and software that we take for granted. As part of the course, you will investigate computer programming and the interactivity of hardware and software. You will develop critical thinking, analysis and problem-solving skills and</p>	<p>Through developing spreadsheet skills, the students will create a ‘Data Dashboard’ that makes the data become ‘meaningful’ to aid decision making.</p> <p>Year 11 Component 3. Effective Digital Working Practices. Explore how organisations use digital systems. Examination (40%)</p> <p>The unit is based around the modern way of working digitally. How people work remotely using Cloud Computing technologies and work collaboratively in teams across the globe. This unit will provide the knowledge of the latest technologies to understand how you work now and in the future.</p> <p>This will equip the students with the skills to progress to specific ICT & Computer Science KS5 courses or employment that is computer oriented.</p> <p>The course gives the opportunity to develop specific theoretical knowledge and skills that will be essential for employment and further education. The key areas are:</p>
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	<p>learn that algorithms are used in every part of Computer Science. An algorithm gives the computer a specific set of instructions, which allows the computer to do everything, be it running a calculator or running a rocket.</p> <p>Computer Science is growing more and more in importance, it is the foundation on which the digital world is built, and you will develop understanding, knowledge, and the skills to progress to further education and employment. You will find that Computer Science provides a superb stepping-stone to the future.</p>	<p>Year 10:</p> <ul style="list-style-type: none"> ·Component 1 includes Systems architecture, memory and storage, computer networks, network security, systems software and impacts of digital technology. <p>Year 11:</p> <ul style="list-style-type: none"> · Component 2 includes Algorithms, Programming fundamentals, Boolean logic, Programming languages and Integrated Development Environments (IDE). <p>Component 1. Computer Systems. Written paper (50%).</p> <p>Component 2. Computational Thinking Written paper (50%).</p> <p>Practical Programming Practical Programming tasks that will help solve problems. These skills will help with the content of Components 1 and 2.</p> <p>This will equip the students with the skills to progress to specific ICT & Computer Science KS5 courses or employment that is computer oriented.</p>
<p>KS5</p>	<p>BTEC National Extended Certificate in Computing</p> <p>The Qualification is only available as an A2 qualification. Computing is concerned both with computers and computer systems – how they work and how they are designed, constructed, and used.</p>	<p>There have been numerous changes to the course content within the syllabus, moving from IT based features like HTML to more Computer Science aspects like Von Neumann architecture.</p>

<p>This qualification is designed to support learners who are interested in learning about the computing sector alongside other fields of study, with a view to progressing to a wide range of higher education courses, not necessarily in the computing sector. It is equivalent in size to one A Level. 4 units are covered 3 are mandatory and 2 are external assessed:</p> <p>Unit 1: Principles of Computer Science (Mandatory, externally assessed) This covers the principles that underpin all areas of computer science. It will develop your computational-thinking skills and you will apply those skills to solve problems.</p> <p>Unit 2: Fundamentals of Computer Systems (Mandatory, externally assessed) Learners study the fundamental principles of how computer systems work, including the role of hardware and software, the way components of a system work together and how data in a system is used.</p> <p>Unit 7: IT Systems Security and Encryption (Mandatory) Learners will study IT system security threats and the methods used to protect against them. Learners undertake activities to protect IT systems from security threats, including data encryption.</p> <p>Unit 14: Development of a Computer Game (Optional) Learners investigate the computer games industry and its</p>	<p>The core study of computing encompasses programming languages, data structures, algorithms, and the underlying science of information and computation. The course offers students access to subject knowledge and skills in computer science and computer systems, enabling them to progress to further study of the computing sector or other sectors.</p> <p>Students focus on knowledge, understanding and skills of software and hardware that is used within ICT in industry and across the technology sector.</p> <p>The Qualification is designed to cover refreshing and exciting content, that's up to date, engaging, fit for purpose and suitable for the needs of in 2016 and beyond. The pathway focuses on the development of a range of applications across platforms and sectors.</p>
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	<p>impact on technological and social trends. They will design and develop a computer game to meet requirements.</p> <p>Along with theoretical knowledge, students will design, build, test and implementation applications. The course will cover the following topic and will be assessed in the following way: All Units are Graded P, M, D, D*</p>	
	<p>OCR Level 3 Cambridge Technical Introductory Diploma in IT (with specialist pathways) (Applications Developer Pathway)</p> <p>Learners must achieve a total of a total of 5 units consisting of 2 mandatory examined units Unit 1 Fundamentals of IT and Unit 2 Global information; and 3 further units, that are internally assessed coursework units, Unit 6 Application design, Unit 8 Project management and Unit 21 Web design and prototyping. Each unit covers the following:</p> <p>Unit 1 Fundamentals of IT, develops a sound understanding of IT technologies and practices that are essential for IT professionals. Information learnt in this unit will provide a solid foundation in the fundamentals of hardware, networks, software, the ethical use of computers and how business uses IT.</p> <p>Unit 2 Global Information, demonstrates the uses of information in the public domain, globally, in the cloud and across the internet, by individuals and organisations. It provides a greater understanding of how organisations</p>	<p>The qualification involves a refreshing and exciting content, that's up to date, engaging, fit for purpose and suitable for the needs of your students in 2016 and beyond. Students who study this subject will gain the right combination of knowledge, understanding and skills required for the 21st century.</p> <p>The qualification develops students' knowledge, understanding and skills of the principles of IT and Global Information Systems. Students will gain an insight into the IT sector as they investigate the pace of technological change, IT infrastructure, the flow of information on a global scale, and the importance of legal and security considerations. This will allow the students to succeed in any career path they choose while using technology, along with helping students to succeed in Higher Education as the qualification meets the requirements that today's universities and employers demand.</p> <p>The qualification will complement a Key Stage 5 study programme alongside other vocational qualifications, A Levels,</p>

<p>use information sources both internally and externally and the types of information encountered. Looking at how data is stored and processed by organisations. It develops an understand the legislation and regulation governing information that flows into and out of an organisation and the constraints and limitations that apply to it.</p> <p>Unit 6 Application Design, will ask you to develop and design an application for a specific user to interact with.</p> <p>Unit 8 Project Management, will provide students the opportunity to understand and use various project planning skills and techniques, by creating a specific project; thereby enabling you to become more effective in the workplace.</p> <p>Unit 21 Web Design and Prototyping, will ask you to develop and design a website for a specific user to interact with.</p>	<p>and will practically apply their skills and knowledge in preparation for further study, apprenticeship or the workplace.</p>
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