



COMPUTER SCIENCE AND INFORMATION
COMMUNICATIONS TECHNOLOGY PATHWAY

Taunton Pre –Prep, Preparatory, International
and Senior School

2020





Taunton Pre-Prep

Reception

In Reception, Pupils in Years 1 and 2 are taught in forms and have 1 lesson per week.

Key Stage 1

	<p>Skills</p> <p>The assessment aims are as follows:</p>
<p>Year 1 topics</p> <ul style="list-style-type: none"> • Cyber Safety • How Computers Work • Using a Computer • Beebot Programming 	<ul style="list-style-type: none"> • understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions • create and debug simple programs • use logical reasoning to predict the behaviour of simple programs • use technology purposefully to create, organise, store, manipulate and retrieve digital content • recognise common uses of information technology beyond school • use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies
<p>Year 2 topics</p> <ul style="list-style-type: none"> • Love Letters to Computers • Using a Computer/typing • Cyber Safety • Movie Making • Scratch Junior 	

Lower Key Stage 2

Pupils in Years 3 and 4 are taught in forms and have 1 lesson per week.

<p>Year 3 and 4 topics</p>	<p>Skills</p> <p>Years 3 and 4 will develop:</p>
<p>Year 3</p> <ul style="list-style-type: none"> • Key skills in computing • Adventures in coding • Typing • Cryptography • Tourism Posters • Cyber Safety 	<ul style="list-style-type: none"> • use sequence, selection, and repetition in programs; work with variables and various forms of input and output • use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs • use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content • 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, evaluating and presenting data and information • use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact
<p>Year 4</p> <ul style="list-style-type: none"> • Search Skills • Video editing • Scratch Programming • Cyber Safety • Sound Editing • Code.org 	



Upper Key Stage 2

Pupils continue to be taught in forms in Year 5 and Year 6. Year 5 are taught by form teachers and year 6 are taught by specialist Computer Science / Information Technology teachers. Pupils have 1 lesson a week.

<p style="text-align: center;">Year 5 and 6 topics</p> <ul style="list-style-type: none"> • Victorian Technology Pioneers • Future Technologies Ethics • Interactive Story Making • Logo Programming • Web Design • Cyber Safety • Networks • Game Development • Binary and Hexadecimal • Photoshop • App Development • Cyber Safety 	<p>Skills</p> <p>In Years 5 and 6 will develop:</p> <ul style="list-style-type: none"> • design, write and debug programs that accomplish specific goals; solve problems by decomposing them into smaller parts • 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 • understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal] • understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits • use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact
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Key Stage 3

Pupils are taught in mixed forms in Year 7 and Year 8, set based upon their MFL ability. Both year groups are taught by specialist Computer Science / Information Technology teachers. Pupils have 1 lesson a week.

<p style="text-align: center;">Year 5 and 6 topics</p>	<p>Skills</p> <p>In Years 7 and 8 will develop:</p>
<p style="text-align: center;">Year 7</p> <ul style="list-style-type: none"> • How Computers Work • Python: The Basics • Adobe Illustrator • Micro Bits • Digital Literacy • Cyber Safety 	<p>Skills</p> <ul style="list-style-type: none"> • design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems • use multiple programming languages, including textual, to solve a variety of computational problems; make appropriate use of data structures; design and develop modular programs that use procedures or functions • understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems • undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users • create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability • understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns
<p style="text-align: center;">Year 8</p> <ul style="list-style-type: none"> • Micro Python • Excel • Database • Swift Playgrounds • Emerging Technologies • Podcasting 	



Taunton Senior School

Key Stage 3

Pupil's in Year 9 have 2 lessons per week. The Year 9 course of study follows the broad requirements of the National Curriculum, with particular focus being directed towards the teaching of programming and the development of pupil's digital literacy.

<p style="text-align: center;">Year 9 topics</p> <ul style="list-style-type: none"> • App Development • Graphic Design – Using Photoshop • Introduction To Programming – Python • Web Design – HTML and CSS • Video And Sound Editing • Duke Of York iDEA Bronze / Silver Award 	<p style="text-align: center;">Skills</p> <p>In Year 9 pupils will develop:</p> <ul style="list-style-type: none"> • Problem solving, • Computational thinking, • Digital literacy, • Research skills, • An understanding of Internet Safety and how to stay safe online.
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Key Stage 4

Computer Science and Information Communication Technology are optional subjects at KS4. Pupils in Year 10 and 11 have 4 lessons per week. We follow the iGCSE Computer Science and iGCSE Information Communications Technology courses run by the CIE examination board. Both courses prepare pupils successfully for Sixth Form study of either subject. Taunton International School follow the iGCSE Computer Science run by the CIE examination board and iGCSE Information Communications Technology courses run by the EdExcel examination board.

Computer Science

<p style="text-align: center;">Years 10 and 11</p> <ul style="list-style-type: none"> • Section 1 Theory of Computer Science • Data representation • Binary systems • Hexadecimal • Data storage • Communication and Internet technologies • Data transmission • Security aspects • Internet principles of operation • Hardware and software • Logic gates • Computer architecture and the fetchexecute cycle • Input devices • Output devices • Memory, storage devices and media • Operating systems • High- and low-level languages and their translators • Security • Ethics • Section 2 Practical Problem-solving and Programming • Algorithm design and problem-solving • Problem-solving and design • Pseudocode and flowcharts • Programming • Programming concepts • Data structures; arrays • Databases 	<p style="text-align: center;">Skills</p> <p>The assessment aims are as follows:</p> <p>Computer Science course aims are to develop:</p> <ul style="list-style-type: none"> • Computational thinking that is thinking about what can be computed and how, and includes consideration of the data required • Understanding of the main principles of solving problems by using computers • Understanding that every computer system is made up of sub-systems, which in turn consist of further sub-systems • Understanding of the component parts of computer systems and how they interrelate, including software, data, hardware, communications and people • Skills necessary to apply understanding to solve computer-based problems using a high-level programming language.
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Information Communications Technology (Taunton Senior School)

<p>Years 10 and 11</p> <ul style="list-style-type: none"> • Types and components of computer systems • Input and output devices • Storage devices and media • Networks and the effects of using them • The effects of using IT • ICT applications • The systems life cycle • Safety and security • Audience • Communication • File management • Images • Layout • Styles • Proofing • Graphs and charts • Document production • Data manipulation • Presentations • Data analysis • Website authoring 	<p>Skills</p> <p>The assessment aims are as follows:</p> <p>Information Communications Technology aims are to develop:</p> <ul style="list-style-type: none"> • Knowledge of ICT including new and emerging technologies • Autonomous and discerning use of ICT • Skills to enhance work produced in a range of contexts • Skills to analyse, design, implement, test and evaluate ICT systems • Skills to consider the impact of current and new technologies on methods of working in the outside world and on social, economic, ethical and moral issues • ICT-based solutions to solve problems • The ability to recognise potential risks when using ICT, and use safe, secure and responsible practice.
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Information Communications Technology (Taunton International School)

<p>Years 10 and 11</p> <ul style="list-style-type: none"> • Digital Devices • Connectivity • Operating Online • Online Goods and Services. • Applying Information and Communication Technology • Software Skills 	<p>Skills</p> <p>The assessment aims are as follows:</p> <p>Information Communications Technology aims are to:</p> <ul style="list-style-type: none"> • Explore how digital technology impacts on the lives of individuals, organisations and society • Learn about current and emerging digital technologies and the issues raised by their use in a range of contexts by individuals and organisations • Develop awareness of the risks that are inherent in using ICT and the features of safe, secure and responsible practice • Broaden and enhance their ICT skills and capability • Work with a range of digital tools and techniques to produce effective ICT solutions in a range of contexts • Learn how to reflect critically on their own and others' use of ICT and how to adopt safe, secure and responsible practice.
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Key Stage 5

In the Sixth Form there is a choice between A Level Computer Science and A Level Information Technology. At A Level we follow the CIE iGCE A Level Computer Science and the iGCE A Level Information Communications Technology. Both the A Level Computer Science and Information Communications Technology demand high degrees of problem solving, as well as an ability to develop a clear, efficient solutions to technology-based problems.

Computer Science

Computer science is the study of the foundational principles and practices of computation and computational thinking and their application in the design and development of computer systems.

<p>A Level Topics</p> <ul style="list-style-type: none"> • Unit 1: Theory fundamentals - This unit provides learners with knowledge and understanding of the following core aspects of computer systems: Information representation, Communication and internet technologies, Hardware, Processor fundamentals, System software, Security, privacy and data integrity Ethics and ownership, Database and data modelling. • Unit 2: Fundamental problem-solving and programming - This unit provides learners with knowledge and understanding of the following core aspects of problem-solving and programming: Algorithm design, Data representation, Programming, Software development. • Unit 3: Advanced theory - This unit provides learners with knowledge and understanding of the following core aspects of computer systems: Data representation, Communication and internet technologies, Hardware, System software, Security, Monitoring and control systems. • Unit 4: Further problem-solving and programming skills - This unit provides learners with knowledge and understanding of the following core aspects of problem-solving and programming: Computational thinking and problem-solving, Algorithm design methods, Further programming, Software development. 	<p>Skills</p> <p>The assessment objectives include:</p> <ul style="list-style-type: none"> • To develop computational thinking • To develop an understanding of the main principles of solving problems using computers • To develop an understanding that every computer system is made up of subsystems, which in turn consist of further subsystems • To develop an understanding of the component parts of computer systems and how they interrelate, including software, data, hardware, communications and people • To acquire the skills necessary to apply this understanding to develop computer-based solutions to problems
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Information Communications Technology

In a world where Information Communications Technology (ICT) is constantly changing, individuals increasingly need technological and information literacy skills that include the ability to gather, process and manipulate data. The impact of ICT on society is enormous and as the percentage of businesses and households connected to communication networks such as the internet grows, so does the need for individuals who understand these new technologies.

<p>A Level Topics</p> <ul style="list-style-type: none"> • Data, information, knowledge and processing • Hardware and software • Monitoring and control • E-safety and health and safety • The digital divide • Using networks • Expert systems • Spreadsheets • Database and file concepts • Sound and video • Emerging technologies • Role and impact of IT in society 	<p>Skills</p> <p>The assessment objectives include:</p> <ul style="list-style-type: none"> • Develop a broad range of IT skills • Develop an understanding of the parts, use and applications of IT systems within a range of organisations, including the use of basic computer networks • Develop an understanding of how IT systems affect society in general • Develop an understanding of the main systems life cycle and apply this understanding to workplace situations
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| <ul style="list-style-type: none">• Networks• Project management• System life cycle• Graphics creation• Animation• Mail merge• Programming for the web | <ul style="list-style-type: none">• Develop a broad knowledge of the use of IT in workplace situations• Develop an understanding of project management skills Be aware of new and emerging technologies• Be aware of the role of the internet and its potential but also its risks• Apply their knowledge and understanding of IT to solve problems |
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Contributors:

Pre-Prep: Kirsty Rogers

TPS: Kirsty Rogers

TSI: Darren Jones

Taunton Senior School: Simon Ryder