
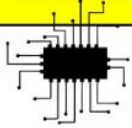






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|--------------------------------------|---|---|--|---|---|--|
| KS3 Computing Sequenced Units | Data Representation  | Hardware and Networks  | Digital Graphics  | The Web  | Programming  | Information Technology  |
| | TKS KS3 Computing Curriculum Journey | | | | | |

| Year 7 Main | Half term 1 | Half term 2 | Half term 3 | Half term 4 | Half term 5 | Half term 6 |
|-------------------------------|---|---|--|---|---|--|
| | 7.1 Binary | 7.2 Hardware | 7.3 Graphics | 7.4 Online Identity | 7.5 Programming | 7.6 Web Development Project |
| Overview | Students are given an introduction as to how computers communicate all the information at speed | Students are taught the main parts of a device needed for it to function correctly | Students are taught that images are made up of their parts and therefore each of the parts has a role to play in the overall image | Students are taught how online environments can alter the way a person will behave and act. | Students are taught the main three programming constructs and how they are interweaved in programming | Students understand that a webpage is a group of interconnected pages that have solid internal links; they can plan and build a website based on their given scenario |
| End point | Students are able to recognise binary and calculate denary to binary and binary to denary | Students can recognise the difference between input and output devices and have an overview understanding of how the CPU works | Students are able to make and combine several assets to a given specification | Students can create a document to outline the need for suitable sanctions and restrictions on online environments | Students are able to state the differences between sequence, selection and iteration | Students were able to plan and develop a website with suitable content based on given scenario |
| Knowledge & Skills | <p>LO1: Computers use binary to represent all data.</p> <p>LO2: Bit patterns represent numbers and images.</p> <p>LO3: Perform simple operations using bit patterns, e.g. binary addition.</p> | <p>LO1: Function of the main internal parts of basic computer architecture.</p> <p>LO2: Operating systems and application software for the same hardware.</p> <p>LO3: Computers collect data from various input devices, including sensors and application software.</p> | <p>LO1: Recognise an audience when designing content.</p> <p>LO2: Functions and features of software.</p> <p>LO3: Presenting data well.</p> | <p>LO1: Evaluate uses of digital devices.</p> <p>LO2: Recognise ethical issues surrounding the application of information technology beyond school.</p> | <p>LO1: Sequence, selection and iteration</p> <p>LO2: Abstraction, decomposition Algorithmic thinking</p> | <p>LO1: How to collect and organise data.</p> <p>LO2: Make judgements about digital content when evaluating and repurposing it for a given audience.</p> <p>LO3: Make static web pages.</p> |

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| Knowledge organisers | Binary 7 & 8 | Hardware and Software Year 7 & 8 | Graphics 1 | Online identity and environments | Programming Year 7 & 8 | Year 7 Project |
| Assessment | Evidence from classwork in OneNote; online test at end of topic with a mixture of multiple-choice and open text. | Evidence from classwork in OneNote; final presentation on hardware components and their purpose. | Evidence from classwork in OneNote; final graphic based on the scenario contents | Evidence from classwork in OneNote; long answer questions on suitable online choices. | Evidence from classwork in OneNote; online multiple-choice questions. | Evidence from classwork in OneNote; HTML pages and content based on scenario. |
| Reading Opportunities | | Reviews on current PC and/or device trends; upcoming technologies | | News articles online safety | | Jakob Nielsen – The art of Websites |
| Writing Opportunities | Explanations | Hardware descriptions | Justification of final graphic | Ethical discussions | Python code | Web page content |
| Vocabulary focus | Binary, denary, hexadecimal | Input, output, CPU, GHz, | Pre-production, assets, specification | Environment, danger, suitability | Sequence, selection, iteration, testing | HTML, assets, context |
| NC benchmarks | Data and Data representation | Hardware and Processing | Information technology | Communication and networks | Programming and development | Communication and networks /Information technology |
| OCR GCSE ref | CS 1.8 Data representation | CS 1.1 Architecture | CiM R082:L02/3 | CS 1.8 Ethics | CS 2.1 Programming constructs | CiM R085 L02/LO3 |

| Year 8 Main | Half term 1 | Half term 2 | Half term 3 | Half term 4 | Half term 5 | Half term 6 |
|-------------------------------|--|--|--|---|--|---|
| | 8.1 Data representation | 8.2 Networks | 8.3 Animation | 8.4 Online environments | 8.5 Language types | 8.6 Physical computing |
| Overview | Students understand the need to have more than one language to be able to communicate large amounts of data, including images | Students are taught the difference between a physical, wireless and mobile networks and the protocols needed to communicate data | Students create an animation using specialist software | Students are shown the different online environments that are in use and the dangers of using them | Students explore different language types and how they are used in different situations | Students use Raspberry Pi computers to complete and control electronic circuits |
| End point | Students can convert binary to decimal and vice versa, then be able to convert hex to decimal and vice versa | Students can identify the type of network needed for a given situation | Students create an animation containing some basic features for some and advanced for some | Students will be able to evaluate the types of environments and be able to justify the uses and outline the dangers | Students will be able to describe how and why languages are suited to differing live situations. | Students are able to make and code a circuit with Python using a Raspberry Pi computer |
| Knowledge & Skills | <p>LO4: Bit patterns.</p> <p>LO5: Resolution and colour depth.</p> <p>LO6: The relationship between binary and file size.</p> | <p>LO4: IP addresses and packet switching.</p> <p>LO5: Know the difference between physical, wireless and mobile networks.</p> <p>LO6: Standard hardware and protocols, e.g. SMTP, iMAP, POP, FTP, TCP/ IP.</p> | <p>LO4: Evaluate the appropriateness of digital devices.</p> <p>LO5: Use features of software effectively.</p> <p>LO6: Responding effectively to feedback</p> | <p>LO4: Explain how the use of technology can impact on society.</p> <p>LO5: Identify weaknesses in a system</p> <p>LO6: Use technologies and online services securely; identify and report inappropriate conduct.</p> | <p>LO3: Procedures and functions.</p> <p>LO4: Effective error checking</p> <p>LO5: Using standard libraries in high-level languages</p> | <p>(Uses 7.5 and 8.5 LO)</p> <p>LO1: Plan and prepare hardware</p> <p>LO2: Teamwork</p> |
| Knowledge organisers | Binary 7 & 8 | Networking Year 8 and 9 | Animation | Online identity and environments | Languages | Physical computing |
| Assessment | Evidence from classwork in OneNote; online test at end of topic with a mixture of multiple-choice and open text. | Evidence from classwork in OneNote; summation on purpose and suitability of network types for given scenarios. | Evidence from classwork in OneNote; production of animation based on scenario. | Evidence from classwork in OneNote; creation of policy document outlining system security methods. | Evidence from classwork in OneNote; production of effective code to suit scenarios | Evidence from classwork in OneNote; evidence of working circuits with correct code. |
| Reading Opportunities | Article: Colossus - binary ideas | News article: Network security | Dear time: | News article: Personal cyber-security How Madonna Crashed the internet | Coding magazines (Hello World) | Coding magazines (Hello World) |

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| Writing Opportunities | | Descriptions of network hardware | Planning documentation: Analysis of the brief | Written assessment | Python code | Python code |
| Vocabulary focus | Binary, hexadecimal, binary addition | Physical, wired, devices, networks, WAN, LAN, mobile networks | Tween, onion skinning | Evaluate, justify, appropriate | Sequence, selection, iteration | Circuit, resistor, switch, diode |
| NC benchmarks | Data and Data representation | Communication and networks | Information Technology | Communication and networks | programming and development | Programming and development |
| OCR GCSE ref | CS 1.8 Data representation | CS 1.4 Networks | CiM R086 | J277 1.3 | J277 | CS 2.1 Programming constructs |

| Year 9 Main | Half term 1 | Half term 2 | Half term 3 | Half term 4 | Half term 5 | Half term 6 |
|-------------------------------|--|---|---|---|--|---|
| | 9.1 Character Sets | 9.2 Device protection | 9.3 2D/3D characters | 9.4 Inter - What? | 9.5 Algorithmic thinking | 9.6 Project - Digital attack |
| Overview | Students understand how binary representation can apply to multiple instances, such as images and sound | Students are taught the need for AUP and network security methods to physically protect device as well as measures that need to be taken by individuals that use the devices | Students learn how to draw a digital character and bevel and extrude sections | Students discover how the internet works - from company service to households – and how a search engine works | Students take on creation of documents to aid the planning and construction of sets of code | Students work on a digital project to bring unit 2 and graphics production together |
| End point | Students can identify patterns and perform simple image and sounds calculations understanding the aspects of encoding | Students can take responsibility for not only their devices but other networked devices and can suggest improvements to security | Students will be able to create a character that has been based on a scenario | Students can list the topologies used to transfer files from one device to another and be able to describe how encryption works | Students can produce various sets of documentation in order to produce effective programmes | Students have an overall project showing the ways to keep devices and their content safe when working online. |
| Knowledge & Skills | <p>LO7: Understand how numbers, images, sounds and character sets use the same bit patterns.</p> <p>LO8: Know the relationship between data representation and data quality.</p> | <p>LO7: Digital Network security methods</p> <p>LO8: Physical network security methods</p> <p>LO9: Recognise that persistence of data on the internet requires careful protection of online identity and privacy</p> | <p>LO7: Design criteria based on given scenario</p> <p>LO8: Produce content based on criteria</p> <p>LO9: Evaluate their own performance based on criteria</p> | <p>LO7: Understand how search engines rank search results.</p> <p>LO8: Understand how to effectively use search engines, and knows how search results are selected, including that search engines use ‘web crawler programmes’.</p> | <p>LO7: Recognise that some problems share the same characteristics and use the same algorithm to solve both.</p> <p>LO8: Detect and corrects syntactical errors.</p> <p>LO9: Appreciate the need for, and write, custom functions including use of parameters.</p> | <p>LO7: Undertake creative projects that collect, analyse, and evaluate data to meet the needs of a known user group.</p> <p>LO8: Effectively design and create digital artefacts for a wider or remote audience</p> <p>LO9: Document user feedback, the improvements identified and the refinements made to the solution.</p> <p>LO's 7-9 from 9.2</p> |
| Knowledge organisers | Character sets | Networking Year 8 and 9 | 2D/3D characters | Communication protocols | algorithms | Networking and Animation |
| Assessment | Evidence from classwork in OneNote; multiple choice answer form. | Evidence from classwork in OneNote; students produce own annotated AUP. | Evidence from classwork in OneNote; final character presentation. | Evidence from classwork in OneNote; multiple choice answer form. | Evidence from classwork in OneNote; production of effective code to suit scenarios. | Evidence from classwork in OneNote; final project output. |

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| Reading Opportunities | | News article: Piggy backing | History of Disney/Pixar | Origins of the internet (World heritage) | | News Article: Social engineering |
| Writing Opportunities | Descriptions of encoding methods | Acceptable Use Policy (AUP) | Planning documentation; success criteria | Explanation texts | Pseudo Code | Project planning and evaluation |
| Vocabulary focus | Hertz, Unicode, ascii, bit rate, frequency, bit depth | AUP, network security, hacking, phishing, spear phishing | Bevel, emboss, camera angle, lighting, extrude | TCP/IP, IP, MAC, encryption, bots | Flow chart, logic, pseudo code | AUP, network security, hacking, phishing, spear phishing, inbetweening, onion skinning, |
| NC benchmarks | data and data representation | Hardware and processing | Information technology | communication and networks | algorithms | hardware and processing and Information technology |
| OCR GCSE ref | CS 1.8 Data representation | CS 1.4 Networks | CiM R081 | CS 1.5 | CS 2.1 | CS 1.4 Networks |

| Year 10 CS Main | Half term 1 | Half term 2 | Half term 3 | Half term 4 | Half term 5 | Half term 6 |
|-------------------------------|--|--|---|--|---|---|
| | Hardware | Memory | Data and compression | Networks | System security | Algorithmic thinking |
| Overview | Students learn how the CPU inside a computer works, relate it to current models of desktop and mobile computing. | Students appreciate the different types of memory and storage in use in modern computer. | Students understand how a computer represents different types of data. | Students understand why we use networks, how they are set up and what hardware is required. | Students gain an understanding of the security risks that networks bring. | Students understand how and when to use flow charts and pseudocode to outline and specify algorithms. |
| End point | Students can explain the fetch-decode-execute model and know how it relates to how a CPU works. | Students can compare and contrast the various types of memory and storage in use in a modern computer. | Students can explain how data is stored in a computer and the ways computers can compress data to save space. | Students can list and describe the hardware required to setup a network and are aware of the ways in which data is transferred. | Students can detail the common security threats and necessary prevention measures associated with networks. | Students can describe algorithms as both flowcharts and as pseudocode, to a detailed level in the case of pseudocode. They are aware of standard algorithms for searching and sorting data. |
| Knowledge & Skills | LO1 Purpose of the CPU LO2 Common CPU components LO3 Von Neumann architecture LO4 CPU performance LO5 Embedded systems | LO1 Primary storage LO2 RAM and ROM LO3 Virtual memory LO4 Secondary storage device LO5 Types of storage device LO6 Units of data storage | LO1 Binary and hexadecimal LO2 Binary shifts LO3 Character formats LO4 Image formats LO5 Sound formats LO6 Compression | LO1 Types of network LO2 Network performance LO3 Network usage and topologies LO4 Addressing LO5 Network protocols and standards LO6 Layers | LO1 Forms of attack LO2 Common prevention methods | LO1 Computational thinking LO2 Algorithmic thinking LO3 Standard algorithms |
| Knowledge organisers | KS1.1 | KS1.2, 1.3 | KS1.4 | KS2.1, 2.2 | KS2.3 | KS4.1 |
| Assessment | At the end of each topic, assessment will be built in the form of past paper questions (from the exam board online system, OCR "Exam Builder") with half the marks available taken from the current topic, and half from a range of the previous topics covered. | | | | | |
| Reading Opportunities | Technology news | Technology news | | Technology news | Security news | |
| Writing Opportunities | Descriptions of common CPU components | Recommendations of storage devices for given scenarios | Comparisons of character encodings, and compression techniques | Descriptions of network hardware and protocols | Long answer exam questions | Pseudo code algorithms |
| Vocabulary focus | Fetch Decode Execute Von Neumann Embedded | Bit Nibble Byte Kilobyte Megabyte Gigabyte | Binary Hexadecimal ASCII Unicode Metadata Analogue | Router Switch Transmission Topology Bandwidth Protocol | Malware Social engineering SQL injection Penetration testing Encryption | Abstraction Decomposition Algorithm Pseudocode Syntax |

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| | | Terabyte Petabyte | Digital Compression Lossy Lossless | | | |
| NC benchmarks | | | | | | |
| OCR GCSE ref | J277 1.1 | J277 1.2.1 - 1.2.3 | J277 1.2.4, 1.2.5 | J277 1.3 | J277 1.4 | J277 2.1 |

| Year 11 CS Main | Half term 1 | Half term 2 | Half term 3 | Half term 4 | Half term 5 |
|-------------------------------|--|---|--|---|--|
| | Programming techniques | Robust programming | Boolean logic | Languages | Software and Ethics |
| Overview | Students will know the fundamental structures of programming and Are able to use them to build simple computer programs. | Students will know how to produce reliable, sturdy solutions to coding challenges in a high level programming language. | Students will be able to read truth tables and logic gates. | Students understand the implications of low- and high-level programming languages. Be able to discuss integrated development environments. | Students know the roles and expectations of the types of software on a modern computer system and also be aware of the various laws that affect the computing industry. |
| End point | Students will be able to code solutions to simple challenges (in Python) that required a command of sequence, selection and iteration. They will be able a wide range of data types in their solutions. | Students will be able to code solutions to challenges in Python that are able to withstand bad inputs from users. They will also be able to detail test plans to prove how they know their programs work. | Students can understand simple logic diagrams presented as either logic gates or simple logic operators. They can also create truth tables to/from those logic diagrams. | Students can compare and contrast low- and high-level programming languages; they understand why they must be translated into a form that the computer can execute and how that happens. They can also describe the features that would be expected of a modern integrated development environment (IDE). | Students can describe the differences between system software and utility software and can list the roles of system software. They know which pieces of legislation affect the computing industry and how they are applied. |
| Knowledge & Skills | LO1 Basic programming constructs LO2 Handling inputs and outputs LO3 Using data types LO4 Sub-programs LO5 File handling LO6 Databases | LO1 Defensive design LO2 Input validation LO3 Maintainability LO4 Testing | LO1 Logic diagrams LO2 Truth tables LO3 Combining Boolean operators LO4 Solving logic problems | LO1 Characteristics of low-level and high-level languages LO2 Purpose of translators LO3 Characteristics of translators LO4 Integrated Development Environments (IDEs) | LO1 Purpose of an operating system LO2 Standard roles of an operating system LO3 Purpose of utility software LO4 Standard utility software LO5 Impacts of digital technology LO6 Computer Science legislation |
| Knowledge organisers | KS4.2 | KS4.3 | KS5.1 | KS5.2 | KS3.1, 3.2 |
| Assessment | At the end of each topic, assessment will be built in the form of past paper questions (from the exam board online system, OCR "Exam Builder") with half the marks available taken from the current topic, and half from a range of the previous topics covered. | | | | |
| Reading Opportunities | Example source code | Example source code | | | Technology news |
| Writing Opportunities | Python code | Python code, test plans and dry runs | Explanations of logic problems | Comparisons of features of types of programming language | Ethical dilemmas |

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|-------------------------|--|--|---|---|--|
| Vocabulary focus | Sequence Selection Iteration Boolean SQL | Authentication Authorisation Iterative testing Terminal testing Boundary Invalid Erroneous | Boolean Conjunction Disjunction Negation | Translator Compiler Interpreter Integrated Development Environment Diagnostics | Peripheral Multitasking Encryption Defragmentation Compression Environmental Legislation |
| NC benchmarks | | | | | |
| OCR GCSE ref | J277 2.2 | J277 2.3 | J277 2.4 | J277 2.5 | J277 1.5, 1.6 |

| Year 10 IT Main | Half term 1 | Half term 2 | Half term 3 | Half term 4 | Half term 5 | Half term 6 |
|-----------------------|--|--|---|--|--|---|
| | Why are graphics made ? | Plan. Do. Review | Coursework | Coursework/ Legislation | Pre-production materials | Exam / Why make Websites? |
| Unit | R081/82 | R082 | R082 | R082/81 | R081 | R081/R085 |
| Overview | Students understand the background for graphics and the uses on given situations | Students can create planning documentation and graphics based on an internal scenario, evaluating the end result | Students undertake the coursework based on the given scenario from the exam board in January | Students complete coursework if needed. Students are taught the need for legislation when creating documentation | Students are taught how to create and evaluate pre-production material and extensive exam practice | exam practice. Understand the reasons for websites. |
| End point | Students are able to outline the need and purpose of graphics, highlighting the different types of format that are available | Students produce a sample project to show the quality of the written and practical work needed to attain the grade in this unitisation of the GCSE | Student undertake 10 hours of controlled assessment coursework based on OCR specific scenario. | Students can outline the laws needed and create pre-production material in line with this | Students can answer both long and short questions, knowing where the marks will be awarded. Able to create precise pre-production materials. | Students can apply website knowledge to a arrange so selected sites and break down the site into its composite parts. |
| Knowledge & Skills | LO1: Purpose and content of pre-production LO2: Plan pre-production | LO1: Understand the purpose and properties of digital graphics LO2: Be able to plan the creation of a digital graphic | LO1: Purpose and content of pre-production LO2: Plan pre-production LO3: Produce pre-production documents LO4: Review pre-production documents | LO1: Produce pre-production documents LO2: Review pre-production documents | LO3: Create and save a digital graphic LO4: Review the digital graphic | LO1: Purpose and content of pre-production LO2: Plan pre-production LO3: Produce pre-production documents LO4: Review pre-production documents |
| Knowledge organisers | R081.1 & R082.1 | R082.2 | R082.1/.2 | R081.1 | R081.2 | R081.1/.2 and R085 |
| Assessment | Evidence from classwork in OneNote; LO1: written assessment LO2: preproduction materials | Sample documents | Evidence from classwork in OneNote; External assessment and prior series MOCK paper | LO1 and LO2 Exam questions (exams builder) | Evidence from classwork in OneNote; LO3 and LO4 questions (exams builder) | External Exam |
| Reading Opportunities | Features of graphics | Dear time: Track and Trace issues | | CMA convictions | CC and © | Jacob Nielsen – Fundamentals of web design |
| Writing Opportunities | Long answer exam questions. | | External coursework | External coursework | Long answer exam questions. | External coursework |

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|-------------------------|---|--|--|--|--|-----------------------------|
| Vocabulary focus | File types, file formats, audience demographics, inform, promote, entertain, educate, advertise | Evaluation, specification, content, context, visualisation diagram, mind map, spider diagram | Assets, evaluate, inform (any key terms from the specific exam board scenario) | Evaluation, specification, content, context, visualisation diagram, mind map, spider diagram | Evaluation, specification, content, context, visualisation diagram, mind map, spider diagram | Navigation, site management |
| OCR GCSE ref | R081/82 | R082 | R082 | R082/81 | R081 | R081/R085 |

| Year 11 IT Main | Half term 1 | Half term 2 | Half term 3 | Half term 4 | Half term 5 |
|-----------------------|---|--|---|---|--|
| | Creation of websites | Coursework | What is an animation? | Coursework | Coursework |
| Unit | R085 | R085 | R086 | R086 | R086 |
| Overview | Students are taught to disassemble a website into its composite parts and how to make adjustments to the parts to enhance or edit | Students undertake the coursework based on the given scenario from the exam board in November | Students understand the parts to an animation and why they are needed to ensure that the client brief and specification are met | Students undertake the coursework based on the given scenario from the exam board in January | Students undertake the coursework based on the given scenario from the exam board in January |
| End point | Students are able to make a website that has several integrated pages with a master page | Students have undertaken and completed the 10 hours of coursework for the unit | Students can make and edit assets to use in an animation. | Students have undertaken and completed the 10 hours of coursework for the unit | Students have undertaken and completed the 10 hours of coursework for the unit |
| Knowledge & Skills | LO1: Properties and features of multipage websites LO2: Plan a multipage website to client brief | LO3: Produce a multipage website using multimedia components LO4: Able to review the final website against the client brief | LO1: Purposes and features of animation LO2: Plan a digital animation | LO3: Create a digital animation LO4: Review a digital animation | LO1: Purposes and features of animation LO2: Plan a digital animation LO3: Create a digital animation LO4: Review a digital animation |
| Knowledge organisers | R085.1 | R085.2 | R086.1 | R086.2 | |
| Assessment | Written LO1 and LO2 section | Knowledge checks; External coursework | Written LO1 and LO2 section | Knowledge checks; External coursework | Knowledge checks; External coursework |
| Reading Opportunities | Jakob Nielsen – the art of effective web presence | Jakob Nielsen – web usability | History of Disney/Pixar | History of animation | Legislation: CC and © |
| Writing Opportunities | Assessment | Examples of Websites | Assessment | Assessment | Assessment |
| Vocabulary focus | Evaluation, specification, content, context, visualisation diagram, mind map, spider diagram, client needs, target audience, | Evaluation, specification, content, context, visualisation diagram, mind map, spider diagram, client needs, target audience, | Evaluation, specification, animation, key frame, onion skinning content, context, visualisation diagram, mind map, spider diagram, client needs, target audience, | Evaluation, specification, animation, key frame, onion skinning content, context, visualisation diagram, mind map, spider diagram, client needs, target audience, | Evaluation, specification, animation, key frame, onion skinning content, context, visualisation diagram, mind map, spider diagram, client needs, target audience, |
| OCR GCSE ref | CiM R085 LO1 and LO2 | CiM R085 | CiM R086 LO1 and Lo2 | CiM R086 | CiM R086 |