Department: Computing
Vision Statement: With this pandemic in full flow, what has it taught us about technology? That it's a fantastic way of bridging the gap and keeping the world connected and industries moving. However, with all the knowledge of how these technologies work it isn't enough reading a datasheet without knowing how to use it in a practical way. This is why both ICT and Computer Science are needed to work hand in hand.
Strapline: Conceive, conceptualize, construct – bringing the virtual to reality
Curriculum Story: Since the introduction of Computer Science into the curriculum it has taken a precedence over ICT in headlines, as is the way when something new is introduced. What many have failed to comprehend is that to get outstanding Computer Scientists we need proficient ICT users. For this reason, both need to be given equal precedence. ICT will give the transferrable skills needed to provide students for life after school whilst Computer Science will equip those who wish to see the evolvement of technology for the good of mankind.
Skills developed: [No more than 50 words on what students get from your curriculum] Analytical skills, problem solving, creativity, critical thinking skills and above all else resilience. As a curriculum we will encourage students to try new things and help them realise that they won't get the answer first time and when they do get a solution it doesn't necessary need to be the same as someone else's. It's not the end goal that determines the reward but the journey.

Below when 50 words just aren't enough……

The aim of my curriculum is to develop confident digital citizens who understand the power of their digital world. It uses accessible, challenging and engaging projects that empower students and promotes the productive use of ICT.

I want students to feel able to 'tinker' with technology, to understand how it works and how to make it work for them; they should feel in control.

All students should have the opportunity to write their own programs, produce their own

Apps or create professional quality digital products.

Students should feel safe when using technology and the web. They must learn what their rights and responsibilities are, as well as how legislation such as The Computer Misuse Act and Data Protection Act can affect them.

Finally, our young people must understand how to utilise the power of the cloud. Understand what services are available and that the cloud can be a powerful collaborative tool.

Year 7: Welcome to Jumanji

With any new game, first thing to do is to meet the NPC guide who will give the rules on surviving the levels of the digital game.

Topics	Why we teach this	Links to last topic	Links to future topics	Key skills developed	Cultural capital opportunities	Links to whole school curriculum
Autumn 1 Introduction to School network & Cloud technologies						
Introduction to school network & School rules/AUP Logins/password Resources Files and folders Online World Uni Frog Word Process like a pro Social Media and your digital foot print	For a generation who have grown up with the internet and got a false sense of security it's time to pull down the veil and show them the truth of how their actions are unwittingly putting them at risk.	Link to KS2 programme of Study: 'understand computer networks including the internet; how they can provide multiple services. use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	Deeper understanding of networks. Online World and cybersecurity	Critical thinking skills Email communication MS Office	Sign post key network hardware in school and at home that are used to connect to a network e.g. access wifi at home for appliances/devices such as Smart Tvs and game consoles.	Life skills
Autumn 2 PC Basics – getting to grips with computers						
Computer Systems Inputs/outputs Binary/denary Hardware Software	Everything is great until it stops working! Unit helps you gain knowledge on how the basics of a PC fit together.		Links to year 8 and year 9 under the hood	Analytical skills Problem solving Hardware		Maths
Spring 1 Effective Presentation design						
Create an effective presentation	Target audience -Design principles -Mood board - Creating a house style - Image collection - Content creation - Video - Sound		Links to Y8: Web design & Development	Analytical skills solving Creativity Problem Critical thinking skills Resilience Video/Photo editing MS Office	Research how organisations apply a house style to their websites/social network and printed publications. Focus initial research on Colton Hills School	Art Graphic Design English (creating writing)

Spring 2 – Spreadsheet Basics

Big data is everywhere! Companies use big data in their systems to improve operations, provide better customer service, create personalized marketing campaigns and take other actions that, ultimately, can increase revenue and profits. -	To stand out from the crowd data mining and analytics is an essential skill! In year 7 we start with the basics. An introduction to spreadsheets.	Link to KS2 programme of Study: use sequence, selection, and repetition in programs; work with variables and various forms of input and output	Links to Y8 spreadsheet modelling and year 8 data modelling in preparation for the BTEC DIT.	Analytical skills, problem solving, mathematical equations, creating graphs	Creating a spreadsheet for a fundraising event.	Mathematics, problem solving and making effective graph links to Science/maths

Summer 1 Programming Essentials – Scratch

What is programming Decomposition Abstraction Terminology Minecraft syntax debugging	Now you know what the hardware is capable of doing now it's time to issue it some commands and have it under your control.	Programming	Year 8 Python basics, year 8 HTML, year 9 Python programming	Analytical skills Problem solving Creativity Critical thinking skills Resilience Programming	Problem solving every day systems. Animate using sprites using block programming	Mathematics, graphic design, art

Summer 2 – Programming hardware

Application of computational thinking using programmable hardware.	Time to open the imaginations of the students. Now starts the journey of overcoming obstacles and failing forward. Another fantastic way of applying the key principles of computational thinking to a programmable device. Over the year's new jobs have emerged with use of social media. The successful influencers ensure their content stands out and is memorable,	Links to Y8 programming essentials with Scratch	Year 8 Python basics, year 8 HTML, year 9 Python programming	Analytical skills Problem solving Creativity Critical thinking skills Resilience Video/Photo editing MS Office	A look into LED screens and automated billboards	Product design, mathematics

Year 8:

Topics	Why we teach this	Links to last topic	Links to future topics	Key skills developed	Cultural capital opportunities	Links to whole school curriculum
Autumn 1 Working online an introduction to cloud technologies						
A reminder of the school network and the importance of using folders to remain organised. The unit delves into the concepts of cloud computing. Students have the opportunity to explore the benefits of cloud computing and some of the implications it can bring.	In recent times the development of technology has made it more obvious the need for technology. Work life patterns have changed with a significant job roles now require people to work from home. Modern technologies have paid a great part in this. Brining people together, sharing and collaborating. With the development of technology comes responsibility and awareness of the laws/regulations that govern how we interact with technology. This unit explores not just cloud technology but the legislations that impact individual users and organisations.	Year 7 school network and e-safety	What makes up a computer system Network architecture in year 9	Using cloud storage to save and share files Sharing and collaborating using cloud applications	Working effectively in any modern team	An effective skill that can be applied across the curriculum.
Autumn 2 Chips and Bits: **What makes up a computer system**						
This unit begins with a reminder of hardware and software and how the hardware supports the software in order for a computer system	It is important to know what makes up a computer system but also the ever changing threats to technology.	Working online	Network architecture Interface design	Research internet threats.	Sociological impact	Understanding principles of the data protection act.

to work effectively. This provides the foundation to explore the dangers associated with computer systems and how they can be prevented. Finally linking the computer systems to organisations and how they use technology to support people with different accessibility needs	Technology is not just social or gaming tool but is a vital tool in any organisation. The users of technology are diverse and so the technology should be adapted to support the different users.					

Spring 1 Web development

Understand the purpose of websites. Explore the common trends of websites. Learn the methods to create effective websites using HTML/CSS Review websites Story boarding Resource gathering Resource editing – Photoshop, correct files for internet	Websites offer many purposes. Many organisations benefit from websites for advertising, communication and information sharing. Therefore, making it vital to understand not just the vast purpose of websites but also the design principles of websites and how they are created.	Effective multimedia presentation designs in year 7	Game design App design	Research Designing a wireframe HTML/CSS programming	To develop a website for an existing organisation.	Literacy Graphic design Logical thinking – mathematics

Spring 2 – Programming with Python

First introduction to textual programming using Python 3.9	Describe what an algorithm is and how programs differ. Use the PRIMM method to understand and write programs. An introduction to	Year 7: Programming essentials, programming hardware	Year 9: Programming with Python	Analytical skills Resilience Precision Automaticity	Spreadsheet modelling for a given cause	Business Life skills Problem solving - mathematics

	input/output and variables					
Summer 1 Spreadsheet development						
Data modelling	Students will learn the different data manipulation tools that can be used to change the way that data is presented. Learners will be introduced to a dashboard and understand how dashboards are used to make a summary of data that will allow organisations to make effective decisions.	Year 8 Spreadsheet Development	Year 9: Collecting, presenting and interpreting data	Key skills in spreadsheet development. Analytical skills Functions/formulae	Provide various real life contexts to the topic: Fast food restaurant	Science Mathematics
Summer 2 Game Development						
Use scratch/Kodu to make your animations/games Computational thinking and algorithmic thinking Decomposition	A fun and engaging way to further develop the skills of computational thinking taught in year 7. This unit revisits the core skills in computational thinking and now re-engaged in a game development unit.	Computational thinking programming	Programming and computational thinking in year 9	programming Decomposition Abstraction Terminology Syntax and commands needed in scratch or Kodu	YSD or Minecraft competition to create a game for a national competition	Logical reasoning – mathematics Graphic design

Year 9:

Topics	Why we teach this	Links to last topic	Links to future topics	Key skills developed	Cultural capital opportunities	Links to whole school curriculum
Autumn 1 – Cyber Security						
Recall on the school network. Reminder of the school network drives; where to save documents and where documents can be shared. Moving onto understanding networks and why they are needed.	Did you know the biggest network is the internet? A development of key knowledge built from year 7 to 8 on networks. This unit develops on the knowledge of networks. This time on the physical aspect of networks and the different forms of networks. Starting with what the students know that the school network is a LAN and the internet is a WAN.	The online word The school network	System architecture Networks system security	To distinguish the layout of different network types	A visit to the school's server room to see the actual hardware needed to run a LAN.	Literacy – understand the laws that govern networks.
Autumn 2 Under the hood – System Architecture						
After spending 2 years exploring the hardware outside of the computer its now time to delve deep under the hood. Explore the components of the computer system to see how binary representation actually works.	It is vital to understand the critical components that make a computer system architecture. In year 7 and 8 it was important to distinguish between hardware the different types of hardware (input, output, storage). Now it is time to look inside the computer to understand how instructions from an input device is fetched, decoded and executed by the CPU. This is a deep dive into the components inside a computer system.	Links to Y7 Computer Systems and year 8 Bits and Bobs	GCSE Computer Science – System Architecture, Component 1 or BTEC ICT Modern technologies and cyber attacks in BTEC	Critical thinking skills Automaticity Understand processes		Mathematics
Spring 1: How do computers think?						

What is programming Decomposition Abstraction Terminology Understanding flowcharts and pseudo code	Progression from the previous 2 years of the concepts of computational thinking. This unit now explores further into pseudo code and the syntax of pseudo to breakdown a problem into logical steps using the pseudo code syntax.	Computational thinking from year 7 to year 8. Programming hardware Game developement	Programming with Python Component 2 GCSE CS – computational thinking Component 3 BTEC DIT notations	Problem solving Analytical skills Using syntax correctly.	Real life programming problems to be solved using design concepts such as pseudo code	Logical reasoning – mathematics Literacy – understanding key words such as abstraction, decomposition when breaking down a problem
Spring 2: Command line programming - Python						
Outputs -Inputs and Variable Storage -IF Statements Advancing Knowledge: -FOR Loops -WHILE Loops Problem Solving (Abstraction and Decomposition) Tasks	Command line programming languages are industry standard and used by all major companies for their systems. For working with any app development one must understand key syntax and rules for programming.	Links to Y7, Y8: Programming	Component 2 GCSE CS computational thinking	Problem solving De- bugging Running commands on Python	Real life programming problems to be solved using Python.	Logical reasoning – mathematics Literacy – being able to recall syntax within Python to effectively run a Python program.
Summer 1 – Collecting, presenting and interpreting data						
Identifying reliable sources of data and making conclusions based on the data that has been manipulated to make information that is meaningful.	In order to make decisions, organisations collect vast amounts of data from a range of different sources. They need to use appropriate data-collection methods and ensure that the data is of sufficient quality to enable decision making. Data must then be converted into information to allow it to become useful. Even when data has been converted into information, it will not provide	Y7/8 Spreadsheets/ data modelling, Y8/9 programming concepts	BTEC DIT Component 2	Analytical skills Using advanced functions and formulae in Spreadsheets.	Interpret data based on real life scenarios. Fitness Gyn Analytics, Travel Agent Analytics.	Mathematics English Science

any conclusions on its own. It is up to the data user to be able to look at the information and draw conclusions, so how the information is presented is key to ensuring that effective and accurate decisions are made.						

Summer 2- user interface design

Interfaces are every changing and the purpose of interfaces must be understood before designing/creating the most suitable interface. This unit explores the range of interfaces and the emerging technologies that impact interface designs. Design principles of interfaces are understood before the next stage of design and creation of an interface.	Web development Multimedia presentation design	Y7: Creating effective presentations, Y8: Website design, Y9: Python programming	Systems software in GCSE CS Interface design BTEC L2	Analytical skills Research Report writing Creative thinking	Explore interface designs in various locations such as menu interface at Mc Donalds compared with GUI and CMD designs on computers	Art Graphic Design English – creative language

BTEC IT QUALIFICATION SUITE

Year 10: [BTEC DIT]

[Brief summary of the overall focus here – no more than one line]

Topics	Why we teach this	Links to last topic	Links to future topics	Key skills developed	Cultural capital opportunities	Links to whole school curriculum
Autumn 1 Component 1 – interface design						
Learners will develop their understanding of what makes an effective user interface and how to effectively manage a project. They will use this understanding to plan, design and create a user interface.	As digital technologies and organisations continue to evolve, each new development offers new and exciting ways of completing tasks and interacting with our hardware devices. Each new development opens up a new project with a new set of user requirements that needs to be solved. In this component, you will learn different project planning techniques that can be used to both plan and deliver a project that meets a set of user requirements. User interfaces allow individuals and individuals in organisations to interact with digital technologies. The design of the user interface is crucial in ensuring that users are able to interact positively with their hardware devices. In this component, you will learn the different design principles that can be used to design effective user interfaces and apply appropriate project planning techniques to create a user interface that meets user requirements. This component will build on Key Stage 3 where you have learned about computer systems and software applications. You will learn how effective design and planning has a major	Multimedia presentation design App development Game development	Social media and business L3 Web development L3	Interface design Interface development	Explore interface design in a variety of different locations. To create an interface for a local organisation.	Computer Science – system software Graphic design

	impact on the user experience. This component will help you to progress to further vocational or academic qualifications. It will also enable you to develop transferable project planning skills that can be used across all areas of study and employment.				

Autumn 2 [Component 1 – interface design

Learners will develop their understanding of what makes an effective user interface and how to effectively manage a project. They will use this understanding to plan, design and create a user interface.	As digital technologies and organisations continue to evolve, each new development offers new and exciting ways of completing tasks and interacting with our hardware devices. Each new development opens up a new project with a new set of user requirements that needs to be solved. In this component, you will learn different project planning techniques that can be used to both plan and deliver a project that meets a set of user requirements. User interfaces allow individuals and individuals in organisations to interact with digital technologies. The design of the user interface is crucial in ensuring that users are able to interact positively with their hardware devices. In this component, you will learn the different design principles that can be used to design effective user interfaces and apply appropriate project planning techniques to create a user interface that meets user requirements. This component will build on Key Stage 3 where you have learned about computer systems and software applications. You will learn how effective	Multimedia presentation design App development Game development	Social media and business L3 Web development L3	Interface design Interface development	Explore interface design in a variety of different locations. To create an interface for a local organisation.	Computer Science – system software Graphic design

	design and planning has a major impact on the user experience. This component will help you to progress to further vocational or academic qualifications. It will also enable you to develop transferable project planning skills that can be used across all areas of study and employment.					

Spring 1 component 2 collecting and presenting data

Learners will understand the characteristics of data and information and how they help organisations in decision making. They will use data manipulation methods to create a dashboard to present and draw conclusions from information.	In order to make decisions, organisations collect vast amounts of data from a range of different sources. They need to use appropriate data-collection methods to ensure that the data is of sufficient quality to enable decision making. Data must then be converted into information to allow it to become useful. In this component, you will learn the different data manipulation tools that can be used to change the way that data is presented. You will provide clear summaries of the data and present them in a dashboard that will allow organisations to make effective decisions. Even when data has been converted into information, it will not provide any conclusions on its own. It is up to the data user to be able to look at the information and draw conclusions, so how the information is presented is key to ensuring that effective and accurate decisions are made. In this component, you will learn the different presentation features that can be used to ensure that information is understood clearly in an objective way so that it is not	Computational thinking Spreadsheet design	Component 3 – data notations Computational thinking – GCSE CS	Analytical skills Problem solving Formatting spreadsheets Formulae Pivot tables Macros Charts	To analyse data for a real scenario – football scores, holiday and transport data	Computer science Mathematics Life skills Business Data manipulation in science

	misinterpreted. This component will build on Key Stage 3, where you have learned about how to create programs. This component will help to develop your understanding of how to represent information in different ways to give it more meaning. The component will help you to progress to further vocational or academic qualifications. It will enable you to develop transferable data manipulation tools that you can use to make effective decisions in all areas of study and employment. It will also help you to focus on your chosen specialism in more detail, for example managing big data, business analytics.					

Spring 2 component 2 collecting and presenting data

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Summer 1 Component 3 Effective Digital Working Practices					
Learners will explore how organisations use digital systems and the wider implications associated with their use.	Modern organisations are increasingly reliant on the use of digital systems to complete every day, business-critical tasks. The development of these systems has presented organisations with many opportunities to work in new, inventive and flexible ways to achieve their aims. The systems have also brought new challenges	Computational thinking Spreadsheet design	Cyber security L3 System software GCSE Networking GCSE CS	Notations Cloud computing Tethering and hot spotting Research and creating reports Exam techniques	Share collaborative resources similar to a modern organisations – understand the impact on a business. Cyber-attacks – case studies understanding the	Computer Science – networking and security Life skills Data manipulation in science

					impact of the cyber attacks	
	and a range of responsibilities. This component will give you an opportunity to explore how the developments in technology over recent years have enabled modern organisations to communicate and collaborate more effectively than ever before. The component is designed to allow you to explore the digital systems available to organisations and how their features have an impact on the way organisations operate. You will explore how developments in technology have led to more inclusive and flexible working environments, and how regulation and ethical and security concerns influence the way in which organisations operate. You will analyse information in a range of vocational contexts so that you develop a greater understanding of the use of digital systems by organisations and so that you are able to make reasoned judgements on the systems. This component builds on Key Stage 3 where you will have learned how to use technology responsibly. In this component, you will learn about how organisations can use technology safely and about the cyber security issues when working in a digital organisation. The knowledge and skills you develop in this unit will give you a basis for further study in a range of subject areas, including computing, IT, engineering, creative and scientific, or you may go on to an apprenticeship or entry-level					

	employment where your understanding of technology will be relevant.					

Summer 2 Component 3 Effective Digital Working Practices

Learners will explore how organisations use digital systems and the wider implications associated with their use.	Modern organisations are increasingly reliant on the use of digital systems to complete every day, business-critical tasks. The development of these systems has presented organisations with many opportunities to work in new, inventive and flexible ways to achieve their aims. The systems have also brought new challenges and a range of responsibilities. This component will give you an opportunity to explore how the developments in technology over recent years have enabled modern organisations to communicate and collaborate more effectively than ever before. The component is designed to allow you to explore the digital systems available to organisations and how their features have an impact on the way organisations operate. You will explore how developments in technology have led to more inclusive and flexible working environments, and how regulation and ethical and security concerns influence the way in which organisations operate. You will analyse information in a range of vocational contexts so that you develop a greater understanding of the use of digital systems by organisations and so that you are able to make reasoned judgements on the systems. This component builds on	Online world Modern technologies	Cyber security L3 System software GCSE Networking GCSE CS	Notations Cloud computing Tethering and hot spotting Research and creating reports Exam techniques	Share collaborative resources similar to a modern organisations – understand the impact on a business. Cyber-attacks – case studies understanding the impact of the cyber attacks	Computer Science – networking and security Life skills

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Year 11: BTEC DIT

[Brief summary of the overall focus here – no more than one line]

Topics	Why we teach this	Links to last topic	Links to future topics	Key skills developed	Cultural capital opportunities	Links to whole school curriculum
Autumn 1 Component 3 Effective Digital Working Practices						
Learners will explore how organisations use digital systems and the wider implications associated with their use.	Modern organisations are increasingly reliant on the use of digital systems to complete every day, business-critical tasks. The development of these systems has presented organisations with many opportunities to work in new, inventive and flexible ways to achieve their aims. The systems have also brought new challenges and a range of responsibilities. This component will give you an opportunity to explore how the developments in technology over recent years have enabled modern organisations to communicate and collaborate more effectively than ever before. The component is designed to allow you to explore the digital systems available to organisations and how their features have an impact on the way organisations operate. You will explore how developments in technology have led to more inclusive and flexible working environments, and how regulation and ethical and security concerns influence the way in which organisations operate. You will analyse information in a range of vocational contexts so that you develop a greater understanding of the use of digital systems by organisations and so that you are able to make	Online world Modern technologies	Cyber security L3 System software GCSE Networking GCSE CS	Notations Cloud computing Tethering and hot spotting Research and creating reports Exam techniques	Share collaborative resources similar to a modern organisations – understand the impact on a business. Cyber-attacks – case studies understanding the impact of the cyber attacks	Computer Science – networking and security Life skills

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Autumn 2 Component 3 Effective Digital Working Practices

Learners will explore how organisations use digital systems and the wider implications associated with their use.	Modern organisations are increasingly reliant on the use of digital systems to complete every day, business-critical tasks. The development of these systems has presented organisations with many opportunities to work in new, inventive and flexible ways to achieve their aims. The systems have also brought new challenges and a range of responsibilities. This component will give you an opportunity to explore how the developments in technology over recent years have enabled modern organisations to communicate and collaborate more effectively than ever before. The component is designed to allow you to explore the digital systems available to organisations	Online world Modern technologies	Cyber security L3 System software GCSE Networking GCSE CS	Notations Cloud computing Tethering and hot spotting Research and creating reports Exam techniques	Share collaborative resources similar to a modern organisations – understand the impact on a business. Cyber-attacks – case studies understanding the impact of the cyber attacks	Computer Science – networking and security Life skills

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Spring 1 Component 3 Effective Digital Working Practices					
Learners will explore how organisations use digital systems and the wider	Online world Modern technologies			Cyber security L3 System software GCSE Networking GCSE CS	Notat Cloud Tethe spotti Resec creati

implications associated with their use.				Exam

Spring 2 [Insert focus of the term here – no more than one line]

	Revision techniques		

Summer 1 [Insert focus of the term here – no more than one line]

Summer 2 [Insert focus of the term here – no more than one line]

Year 12: BTEC IT L3 Extended Certificate/ Diploma

[Brief summary of the overall focus here – no more than one line]

Topics	Why we teach this	Links to last topic	Links to future topics	Key skills developed	Cultural capital opportunities	Links to whole school curriculum
Autumn 1 Unit 2 Creating Systems to manage information						
Learners study the design, creation, testing and evaluation of a relational database system to manage information	In order to produce information to support many business processes as well as our social lives, relational databases are widely used to manage and process data. From the smallest in-house systems to stock control systems for large online retailers, databases are repositories of information that are a significant part of organisational operating requirements. You will examine the structure of data and its origins, and how an efficient data design follows through to an effective and useful database. You will examine a given scenario and develop an effective design solution to produce a database system. You will then test your solution to ensure that it works correctly. Finally, you will evaluate each stage of the development process and the effectiveness of your database solution. To complete the assessment tasks within this unit, you will need to draw on your learning from across your programme. The skills you gain in this unit support progression to IT-related higher education courses and to employment in a role that requires computing-related expertise	Spreadsheet development Programming techniques SQL in GCSE CS	Programming	Normalisation Logical and problem solving skills	Databases are found in so many areas – Google backend is supported by a database, gallery on your phone, to the traditional paper based phone book. This units lends it self to so many every day examples of databases.	Literacy Life skills Business Computer Science Mathematics
Autumn 2 Unit 2 Creating Systems to manage information						

Learners study the design, creation, testing and evaluation of a relational database system to manage information	In order to produce information to support many business processes as well as our social lives, relational databases are widely used to manage and process data. From the smallest in-house systems to stock control systems for large online retailers, databases are repositories of information that are a significant part of organisational operating requirements. You will examine the structure of data and its origins, and how an efficient data design follows through to an effective and useful database. You will examine a given scenario and develop an effective design solution to produce a database system. You will then test your solution to ensure that it works correctly. Finally, you will evaluate each stage of the development process and the effectiveness of your database solution. To complete the assessment tasks within this unit, you will need to draw on your learning from across your programme. The skills you gain in this unit support progression to IT-related higher education	Spreadsheet development Programming techniques SQL in GCSE CS Component 3 Data manipulation	Programming	Normalisation Logical and problem solving skills	Databases are found in so many areas – Google backend is supported by a database, gallery on your phone, to the traditional paper based phone book. This units lends it self to so many every day examples of databases.	Literacy Life skills Business Computer Science Mathematics
Spring 1 Social media in business						
Learners explore how businesses use social media to promote their products and services. Learners also	Social media websites are a popular way for people to communicate and share information with friends and family. People spend a lot of time on social media websites and they give businesses opportunities to interact with people, for example to promote their business, to	Component 1 User interface design App development Website development	Web development L3	Purpose of social media posts How to create social media posts to increase followers Analyse social media posts Manipulate social media data to give	A unit of work that relates well to the school social media policy and drive to engage followers to our social media in a positive way.	Literacy Business

implement social media activities in a business to meet requirements	encourage people to visit their e-commerce site and buy, to provide customer service. You may be familiar with social media for personal use and in this unit you will discover how it can be used in a business context. You will explore different social media websites, the ways in which they can be used and the potential pitfalls when using them for business purposes. You will develop a plan to use social media strategies for business purposes to achieve specific aims and objectives. You will then implement the plan, developing and posting content and interacting with others. Finally, you will collect data on the business use of social media and review the effectiveness of your efforts. Understanding how to use social media for business purposes is useful for employment in information technology and in a variety of business sectors. Also, social media skills are closely linked with web and mobile applications development. This unit gives you a starting point for progression to roles such as social media specialist, content developer and web developer			meaningful information		
Spring 2 social media in business						
Learners explore how businesses use social media to promote their products and	Social media websites are a popular way for people to communicate and share information with friends and family. People spend a lot of time on social media websites and they give businesses opportunities to	Component 1 User interface design App development Website development	Web development L3	Purpose of social media posts How to create social media posts to increase followers Analyse social media posts	A unit of work that relates well to the school social media policy and drive to engage followers to our social media in a positive way.	Interpreting data Creating appropriate social media posts

services. Learners also implement social media activities in a business to meet requirements	interact with people, for example to promote their business, to encourage people to visit their e-commerce site and buy, to provide customer service. You may be familiar with social media for personal use and in this unit you will discover how it can be used in a business context. You will explore different social media websites, the ways in which they can be used and the potential pitfalls when using them for business purposes. You will develop a plan to use social media strategies for business purposes to achieve specific aims and objectives. You will then implement the plan, developing and posting content and interacting with others. Finally, you will collect data on the business use of social media and review the effectiveness of your efforts. Understanding how to use social media for business purposes is useful for employment in information technology and in a variety of business sectors. Also, social media skills are closely linked with web and mobile applications development. This unit gives you a starting point for progression to roles such as social media specialist, content developer and web developer			Manipulate social media data to give meaningful information		
Summer 1 unit 1 information technology systems						
Learners study the role of computer systems and the	Information technology (IT) systems have a significant role in the world around us and play a part in almost everything we do. Having a sound understanding of how to	Creating systems to manage information Social media in business	Web development Cyber security	Exam techniques Synoptic units covers all units across the BTEC L3 course	This unit encompasses aspects covered in the course. It covers IT cyber security,	Literacy Life skills Business Computer Science Mathematics

implications of their use in personal and professional situations	effectively select and use appropriate IT systems will benefit you personally and professionally. You will explore the relationships between the hardware and software that form an IT system, and the way that systems work individually and together, as well as the relationship between the user and the system. You will examine issues related to the use of IT systems and the impact that they have on organisations and individuals. To complete the assessment task within this unit, you will need to draw on your learning from across your programme. This unit will give you a fundamental and synoptic understanding of all areas of IT, supporting your progression to an IT-related higher education course.				transmission types, VPN, how organisations use IT and its impact on users. Students are provided a range of case studies related to the topic.	
Summer 2 unit 1 information technology systems						
Learners study the role of computer systems and the implications of their use in personal and professional situations	Information technology (IT) systems have a significant role in the world around us and play a part in almost everything we do. Having a sound understanding of how to effectively select and use appropriate IT systems will benefit you personally and professionally. You will explore the relationships between the hardware and software that form an IT system, and the way that systems work individually and together, as well as the relationship between the user and the system. You will examine issues related to the use of IT systems and the impact that they have on organisations and individuals. To complete the	Creating systems to manage information Social media in business	Web development Cyber security	Exam techniques Synoptic units covers all units across the BTEC L3 course	This unit encompasses aspects covered in the course. It covers IT cyber security, transmission types, VPN, how organisations use IT and its impact on users. Students are provided a range of case studies related to the topic.	Literacy Life skills Business Computer Science Mathematics

	assessment task within this unit, you will need to draw on your learning from across your programme. This unit will give you a fundamental and synoptic understanding of all areas of IT, supporting your progression to an IT-related higher education course.				

Year 13: unit 1 information technology systems

[Brief summary of the overall focus here – no more than one line]

Topics	Why we teach this	Links to last topic	Links to future topics	Key skills developed	Cultural capital opportunities	Links to whole school curriculum
Autumn 1 unit 1 information technology systems						
Learners study the role of computer systems and the implications of their use in personal and professional situations	Information technology (IT) systems have a significant role in the world around us and play a part in almost everything we do. Having a sound understanding of how to effectively select and use appropriate IT systems will benefit you personally and professionally. You will explore the relationships between the hardware and software that form an IT system, and the way that systems work individually and together, as well as the relationship between the user and the system. You will examine issues related to the use of IT systems and the impact that they have on organisations and individuals. To complete the assessment task within this unit, you will need to draw on your learning from across your programme. This unit will give you a fundamental and synoptic understanding of all areas of IT, supporting your progression to an IT-related higher education course.	Creating systems to manage information Social media in business	Web development Cyber security	Exam techniques Synoptic units covers all units across the BTEC L3 course	This unit encompasses aspects covered in the course. It covers IT cyber security, transmission types, VPN, how organisations use IT and its impact on users. Students are provided a range of case studies related to the topic.	Literacy Life skills Business Computer Science Mathematics
Autumn 2 unit 1 information technology systems						
Learners study the role of computer systems and the implications of their use in personal and	Information technology (IT) systems have a significant role in the world around us and play a part in almost everything we do. Having a sound understanding of how to effectively select and use appropriate IT systems will benefit	Creating systems to manage information Social media in business	Web development Cyber security	Exam techniques Synoptic units covers all units across the BTEC L3 course	This unit encompasses aspects covered in the course. It covers IT cyber security, transmission types,	Literacy Life skills Business Computer Science Mathematics

professional situations	you personally and professionally. You will explore the relationships between the hardware and software that form an IT system, and the way that systems work individually and together, as well as the relationship between the user and the system. You will examine issues related to the use of IT systems and the impact that they have on organisations and individuals. To complete the assessment task within this unit, you will need to draw on your learning from across your programme. This unit will give you a fundamental and synoptic understanding of all areas of IT, supporting your progression to an IT-related higher education course.				VPN, how organisations use IT and its impact on users. Students are provided a range of case studies related to the topic.	
Spring 1 Unit 6 Website Development						
Learners investigate website development principles. They will design and develop a website using scripting languages.	Increasingly, organisations rely on websites to serve customers and, in some cases, to generate revenue. With millions of web pages being created daily, the need for websites to be engaging, innovative and desirable is important. As a website developer, you must use sophisticated techniques to capture user interest and to ensure that customers are served. The scripting involved in the development of websites has become crucial: website developers need to understand and acquire the necessary skills to find solutions to a variety of scenarios and problems. In this unit, you will review existing websites – commenting on their overall design	Information technology systems Database systems Website development (KS3) App development (KS3) Interface design (KS4) Programming	Preparation for future apprenticeships in IT, higher or further education	HTML CSS JavaScript Wireframe designs Flowcharts Evaluating – critique of designs and website	Students will create a website for a local organisation that requires a website. The website will be officially used by the local charitable organisation	Art Business Graphic design Computer Science

	and effectiveness. You will use scripting languages such as Hypertext Markup Language (HTML), Cascading Style Sheets (CSS) and JavaScript® and a simple text editor, or rapid application development tools. Finally, you will reflect on the website design and functionality using a testing and review process. Many software developers, database experts and systems managers need web-client development skills as an integral part of their overall portfolio of expertise. This unit will prepare you for employment as a website developer or as a website development apprenticeship. The unit will benefit you if you want to go on to higher education to develop your studies					
Spring 2 Unit 6 Website Development						
Learners investigate website development principles. They will design and develop a website using scripting languages.	Increasingly, organisations rely on websites to serve customers and, in some cases, to generate revenue. With millions of web pages being created daily, the need for websites to be engaging, innovative and desirable is important. As a website developer, you must use sophisticated techniques to capture user interest and to ensure that customers are served. The scripting involved in the development of websites has become crucial: website developers need to understand and acquire the necessary skills to find solutions to a variety of scenarios and problems. In this unit, you will	Information technology systems Database systems Website development (KS3) App development (KS3) Interface design (KS4) Programming	Preparation for future apprenticeships in IT, higher or further education	HTML CSS JavaScript Wireframe designs Flowcharts Evaluating – critique of designs and website	Students will create a website for a local organisation that requires a website. The website will be officially used by the local charitable organisation	Art Business Graphic design Computer Science

	review existing websites – commenting on their overall design and effectiveness. You will use scripting languages such as Hypertext Markup Language (HTML), Cascading Style Sheets (CSS) and JavaScript® and a simple text editor, or rapid application development tools. Finally, you will reflect on the website design and functionality using a testing and review process. Many software developers, database experts and systems managers need web-client development skills as an integral part of their overall portfolio of expertise. This unit will prepare you for employment as a website developer or as a website development apprenticeship. The unit will benefit you if you want to go on to higher education to develop your studie				
Summer 1 [Insert focus of the term here – no more than one line]					
	Resit exam revision and complete any outstanding internal assessments				
Summer 2 [Insert focus of the term here – no more than one line]					

Computer Science qualification GCSE and A-Level

Year 10: GCSE Computer Science						
[Brief summary of the overall focus here – no more than one line]						
Topics	**Why we teach this**	**Links to last topic**	**Links to future topics**	**Key skills developed**	**Cultural capital opportunities**	**Links to whole school curriculum**
Autumn 1 systems architecture / Memory and storage						
1.1 Systems architecture 1.2 Memory and storage 1.3 Computer networks, connections and protocols 1.4 Network security 1.5 Systems software 1.6 Ethical, legal, cultural and environmental impacts of digital technology **Memory/storage** The need for primary storage ¨ The difference between RAM and ROM ¨ The purpose of ROM in a computer system ¨ The purpose of RAM in a computer system ¨ Virtual memory	The fundamentals of hardware components and how they communicate with one another. This is now getting into the depth of hardware components such as the vital CPU and who was Von-Neumann and what was his link to the modern computer. Memory/storage The need for primary storage ¨ The difference between RAM and ROM ¨ The purpose of ROM in a computer system ¨ The purpose of RAM in a computer system ¨ Virtual memory	What is inside a computer? Understanding computers	Structure and function of a processor (A-Level)	Research Understanding processes of a CPU Analyse and evaluate	The link to Von-Neuman and his impact on the modern day computer system Further reading on the subject area.	Design Technology Mathematics
Autumn 2 1.2.3 Units – data storage , characters						
The units of data storage: Bit Nibble (4 bits) o Byte (8 bits) o Kilobyte (1,000 bytes or 1 KB) o Megabyte (1,000 KB) Gigabyte (1,000 MB) Terabyte	Why data must be stored in binary format ü Familiarity with data units and moving between each ü Calculate capacity of devices	What is inside a computer? Understanding computers	Components of a computer and their uses Exchanging data	Problem solving Analytical skills Mathematical conversion of base numbers		Mathematics Data conversion – physics

(1,000 GB) Petabyte (1,000 TB) ¨ How data needs to be converted into a binary format to be processed by a computer ¨ Data capacity and calculation of data capacity requirements	ü Calculate required capacity for a given set of files ü Calculate file sizes of sound, images and text files § sound file size = sample rate x duration (s) x bit depth § image file size = colour depth x image height (px) x image width (px) § text file size = bits per character x number of characters **Alternatives** • Use of 1,024 for conversions and calculations would b					

Spring 1 Compression

The need for compression ¨ Types of compression: o Lossy o Lossless	Common scenarios where compression may be needed ü Advantages and disadvantages of each type of compression ü Effects on the file for each type of compression **Not required** û Ability to carry out specific compression algorithms	Network architecture and ethics How does a computer work?	Components of a computer and their uses Exchanging data	Analytical skills Problem solving Formatting spreadsheets Formulae Pivot tables Macros Charts	To analyse data for a real scenario – football scores, holiday and transport data	Computer science Mathematics Life skills Business Data manipulation in science

Spring 2 1.3.1 Networks and topologies

Types of network: o LAN (Local Area Network) o WAN (Wide Area Network) ¨ Factors that affect the performance of networks	The characteristics of LANs and WANs including common examples of each ü Understanding of different factors that	How do I become an effective IT user? Working online Network architecture	Software and software development	Analytical skills Problem solving Formatting spreadsheets Formulae Pivot tables	To analyse data for a real scenario – football scores, holiday and transport data	Computer science Mathematics Data manipulation in science

¨ The different roles of computers in a client-server and a peer-topeer network ¨ The hardware needed to connect stand-alone computers into a Local Area Network: o Wireless access points o Routers o Switches o NIC (Network Interface Controller/Card) o Transmission media ¨ The Internet as a worldwide collection of computer networks: o DNS (Domain Name Server) o Hosting o The Cloud o Web servers and clients ¨ Star and Mesh network topologies	can affect the performance of a network, e.g.: § Number of devices connected § Bandwidth ü The tasks performed by each piece of hardware ü The concept of the Internet as a network of computer networks ü A DNS's role in the conversion of a URL to an IP address ü Concept of servers providing services (e.g. Web server " Web pages, File server " file storage/retrieval) ü Concept of clients requesting/using services from a server ü The Cloud: remote service provision (e.g. storage, software, processing) ü Advantages and disadvantages of the Cloud ü Advantages and disadvantages of the Star and Mesh topologies ü Apply understanding of networks to a given scenario	Modern technologies		Macros Charts		
Summer 1 1.4 – Network security						
Forms of attack: o Malware	Threats posed to devices/systems ü Knowledge/principles	Computational thinking Spreadsheet design	Cyber security L3 System software GCSE	Exam techniques Network diagrams and manipulating structures	Share collaborative resources similar to a modern organisations –	BTEC IT

o Social engineering, e.g. phishing, people as the 'weak point' o Brute-force attacks o Denial of service attacks o Data interception and theft o The concept of SQL injection Common prevention methods: o Penetration testing o Anti-malware software o Firewalls o User access levels o Passwords o Encryption o Physical security	of each form of attack including: § How the attack is used § The purpose of the attack Understanding of how to limit the threats posed in 1.4.1 ü Understanding of methods to remove vulnerabilities ü Knowledge/principles of each prevention method: § What each prevention method may limit/prevent § How it limits the attack		Networking GCSE CS		understand the impact on a business. Cyber-attacks – case studies understanding the impact of the cyber attacks	

Summer 2 1.5 – Systems software

The purpose and functionality of operating systems: o User interface o Memory management and multitasking o Peripheral management and drivers o User management o File management The purpose and functionality of utility software ¨ Utility system software: o Encryption software o Defragmentation o Data compression	Technology introduces ethical, legal, cultural, environmental and privacy issues ü Knowledge of a variety of examples of digital technology and how this impacts on society ü An ability to discuss the impact of technology based around the issues listed ü The purpose of each piece of legislation and the specific actions it allows or prohibits	What makes a computer system? Modern technologies	Software and software development	Research Report writing Understanding and interpreting processes	Explore different interfaces in the read world and their purposes	BTEC IT

	ü The need to license software and the purpose of a software licence ü Features of open source (providing access to the source code and the ability to change the software) ü Features of proprietary (no access to the source code, purchased commonly as off-the-shelf) ü Recommend a type of licence for a given scenario including benefits and drawbacks				

Year 11: GCSE Computer Science

[Brief summary of the overall focus here — no more than one line]

Topics	Why we teach this	Links to last topic	Links to future topics	Key skills developed	Cultural capital opportunities	Links to whole school curriculum
Autumn 1 Algorithms						
Principles of computational thinking: o Abstraction o Decomposition o Algorithmic thinking Identify the inputs, processes, and outputs for a problem ¨ Structure diagrams ¨ Create, interpret, correct, complete, and refine algorithms using: o Pseudocode o Flowcharts o Reference language/high-level programming language ¨ Identify common errors ¨ Trace tables	Produce simple diagrams to show: § The structure of a problem § Subsections and their links to other subsections ü Complete, write or refine an algorithm using the techniques listed ü Identify syntax/logic errors in code and suggest fixes ü Create and use trace tables to follow an algorithm	What is inside a computer? Understanding computers How do computers think?	Data types, data structures and algorithms	Logical reasoning Problem solving	tasks are based on real life computational problems	Design Technology Mathematics
Autumn 2 Searching and sorting algorithms						
Standard searching algorithms: o Binary search o Linear search ¨ Standard sorting algorithms: o Bubble sort o Merge sort o Insertion sort	Understand the main steps of each algorithm ü Understand any pre-requisites of an algorithm ü Apply the algorithm to a data set ü Identify an algorithm if given the code for it	What is inside a computer? Understanding computers How does a computer think?	Data types, data structures and algorithms	Problem solving Analytical skills Mathematical conversion of base numbers		Mathematics Data conversion – physics
Spring 1 Programming fundamentals						
The use of variables, constants, operators, inputs, outputs and	Practical use of the data types in a high-	Network architecture and ethics	Elements of computational thinking	Analytical skills Problem solving Logical reasoning	To construct a program for a given scenario that is	Computer science Mathematics Life skills

assignments ¨ The use of the three basic programming constructs used to control the flow of a program: o Sequence o Selection o Iteration (count- and condition-controlled loops) ¨ The common arithmetic operators ¨ The common Boolean operators AND, OR and NOT **Additional programming techniques** ¨ The use of basic string manipulation ¨ The use of basic file handling operations: o Open o Read o Write o Close ¨ The use of records to store data ¨ The use of SQL to search for data ¨ The use of arrays (or equivalent) when solving problems, including both one-dimensional and two-dimensional arrays ¨ How to use sub programs (functions and procedures) to produce structured code ¨ Random number generation	level language within the classroom ü Ability to choose suitable data types for data in a given scenario ü Understand that data types may be temporarily changed through casting, and where this may be useful Practical use of the additional programming techniques in a high-level language within the classroom ü Ability to manipulate strings, including: § Concatenation § Slicing ü Arrays as fixed length static structures ü The use of functions ü The use of procedures ü Where to use functions and procedures effectively ü SQL commands: § SELECT § FROM § WHERE	How does a computer work?	Problem solving and programming Analysis of the problem		based on a real life computational problem	Data manipulation in science
Spring 2 Boolean logic						

Simple logic diagrams using the operators AND, OR and NOT ¨ Truth tables ¨ Combining Boolean operators using AND, OR and NOT ¨ Applying logical operators in truth tables to solve problems	Knowledge of the truth tables for each logic gate ü Recognition of each gate symbol ü Understanding of how to create, complete or edit logic diagrams and truth tables for given scenarios ü Ability to work with more than one gate in a logic diagram	How do I become an effective IT user? Working online Network architecture Modern technologies	Analysis of the problem Algorithms	_Analytical skills Problem solving Formatting		Computer science Mathematics Data manipulation in science

Summer 1						
	<td colspan="5" align="center">**Revision and retrieval of content**</td>					

Summer 2 FINAL EXAMINATIONS						

Year 12: A-Level Computer Science						
Topics	**Why we teach this**	**Links to last topic**	**Links to future topics**	**Key skills developed**	**Cultural capital opportunities**	**Links to whole school curriculum**
Autumn 1 Components of a computer and their uses						
The Arithmetic and Logic Unit; ALU, Control Unit and Registers (Program Counter; PC, Accumulator; ACC, Memory Address Register; MAR, Memory Data Register; MDR, Current	This component will introduce learners to the internal workings of the Central Processing Unit (CPU), the exchange of data and will also look at	**Systems architecture**	Further or higher education in IT or Computer science	Logical reasoning Problem solving Understanding and interpreting processes	Von Neuman Develop further concepts and processes related to the modern computer system	Design Technology Mathematics

Instruction Register; CIR). Buses: data, address and control: how this relates to assembly language programs. (b) The Fetch-Decode-Execute Cycle; including its effects on registers. (c) The factors affecting the performance of the CPU: clock speed, number of cores, cache. (d) The use of pipelining in a processor to improve efficiency. (e) Von Neumann, Harvard and contemporary processor architecture	software development, data types and legal and ethical issues. It is expected that learners will draw on this underpinning content when studying computational thinking, developing programming techniques and devising their own programming approach in the Programming project component (03 or 04). Learners will be expected to apply the criteria below in different contexts including current and future uses of the technologies					
Autumn 2 Exchanging data						
Lossy vs Lossless compression. (b) Run length encoding and dictionary coding for lossless compression. (c) Symmetric and asymmetric encryption. (d) Different uses of hashing. Relational database, flat file, primary key, foreign key, secondary key, entity relationship modelling, normalisation and indexing. See appendix 5f. (b) Methods of capturing, selecting, managing and exchanging data. (c)	This component will introduce learners to the internal workings of the Central Processing Unit (CPU), the exchange of data and will also look at software development, data types and legal and ethical issues. It is expected that learners will draw on this underpinning content when studying computational thinking, developing programming techniques and	Data		Problem solving Analytical skills Mathematical conversion of base numbers		Mathematics Data conversion – physics

Normalisation to 3NF. (d) SQL – Interpret and modify. See appendix 5d. (e) Referential integrity. (f) Transaction processing, ACID (Atomicity, Consistency, Isolation, Durability), record locking and redundancy	devising their own programming approach in the Programming project component (03 or 04). Learners will be expected to apply the criteria below in different contexts including current and future uses of the technologies					
Spring 1 Data types, data structures and algorithms						
Primitive data types, integer, real/floating point, character, string and Boolean. (b) Represent positive integers in binary. (c) Use of sign and magnitude and two's complement to represent negative numbers in binary. (d) Addition and subtraction of binary integers. (e) Represent positive integers in hexadecimal. (f) Convert positive integers between binary hexadecimal and denary. (g) Representation and normalisation of floating point numbers in binary. (h) Floating point arithmetic, positive and negative numbers, addition and subtraction. (i) Bitwise manipulation and masks: shifts, combining with AND, OR, and XOR. (j) How character sets (ASCII and UNICODE) are used to represent text	This component will introduce learners to the internal workings of the Central Processing Unit (CPU), the exchange of data and will also look at software development, data types and legal and ethical issues. It is expected that learners will draw on this underpinning content when studying computational thinking, developing programming techniques and devising their own programming approach in the Programming project component (03 or 04). Learners will be expected to apply the criteria below in different contexts including current and	Data conversion Compression algorithms	Elements of computational thinking Problem solving and programming Analysis of the problem	Analytical skills Problem solving Logical reasoning		Computer science Mathematics Life skills Data manipulation in science

Arrays (of up to 3 dimensions), records, lists, tuples. (b) The following structures to store data: linked-list, graph (directed and undirected), stack, queue, tree, binary search tree, hash table. (c) How to create, traverse, add data to and remove data from the data structures mentioned above. (NB this can be either using arrays and procedural programming or an object-oriented approach)	future uses of the technologies					

Spring 2 Legal, moral, cultural and ethical issues

The Data Protection Act 1998. (b) The Computer Misuse Act 1990. (c) The Copyright Design and Patents Act 1988. (d) The Regulation of Investigatory Powers Act 2000. The individual moral, social, ethical and cultural opportunities and risks of digital technology: • Computers in the workforce. • Automated decision making. • Artificial intelligence. • Environmental effects. • Censorship and the Internet. • Monitor behaviour. • Analyse personal information. • Piracy and offensive communications. • Layout, colour paradigms and character sets.	The individual moral, social, ethical and cultural opportunities and risks of digital technology. Legislation surrounding the use of computers and ethical issues that can or may in the future arise from the use of computers	Legal and ethical issues (GCSE) Modern technologies Network architecture Working online		Forming an argument for or against Further reading around a subject	News articles on IT based topics and laws Further reading on case studies	Computer science Mathematics Data manipulation in science Literacy

Summer 1 Content of Algorithms and programming

a) The nature of abstraction. (b) The need for abstraction. (c) The differences between an abstraction and reality. (d) Devise an abstract model for a variety of situations. Identify the inputs and outputs for a given situation. (b) Determine the preconditions for devising a solution to a problem. (c) The nature, benefits and drawbacks of caching. (d) The need for reusable program components Identify the components of a problem. (b) Identify the components of a solution to a problem. (c) Determine the order of the steps needed to solve a problem. (d) Identify sub-procedures necessary to solve a problem. Identify the points in a solution where a decision has to be taken. (b) Determine the logical	This component will incorporate and build on the knowledge and understanding gained in the Computer systems component (01). In addition, learners should: • understand what is meant by computational thinking • understand the benefits of applying computational thinking to solving a wide variety of problems understand the principles of solving problems by computational methods • be able to use algorithms to describe problems • be able to analyse a problem by identifying its component parts.	KS3/GCSE Computational thinking Algorithms programming		Problem solving Logical reasoning Applying the 3 processes of computational thinking	The aspects of algorithms to be applied to many everyday occurrences that helps students form the link and understanding of algorithms	Mathematics Life skills

conditions that affect the outcome of a decision. (c) Determine how decisions affect flow through a program.					
Determine the parts of a problem that can be tackled at the same time. (b) Outline the benefits and trade offs that might result from concurrent processing in a particular situation.					
Summer 2	**revision and retrieval**				

Year 13: A-Level Computer Science

Topics	Why we teach this	Links to last topic	Links to future topics	Key skills developed	Cultural capital opportunities	Links to whole school curriculum
Autumn 1 Content of non exam assessment Programming project						
Describe and justify the features that make the problem solvable by computational methods. (b) Explain why the problem is amenable to a computational approach Identify and describe those who will have an interest in the solution explaining how the solution is appropriate to their needs (this may be named individuals, groups or persona that describes the target end user)) Research the problem and solutions to similar problems to identify and justify suitable approaches to a solution. (b) Describe the essential features of a computational solution explaining these choices. (c) Explain the limitations of the proposed solution. Specify and justify the solution requirements including hardware and software configuration (if appropriate). (b) Identify and justify measurable success criteria for the proposed solution	Learners will be expected to analyse, design, develop, test, evaluate and document a program written in a suitable programming language. The underlying approach to the project is to apply the principles of computational thinking to a practical coding problem. Learners are expected to apply appropriate principles from an agile development approach to the project development. While the project assessment criteria are organised into specific categories, it is anticipated the final report will document the agile development process and elements for each of the assessment categories will appear throughout the report	**Algorithms** GCSE programming Link to unit 4 programming BTEC L3	Further or higher education in IT or Computer science	Logical reasoning Problem solving Understanding and interpreting processes		Design Technology Mathematics

Autumn 2 Design of the solution

Break down the problem into smaller parts suitable for computational solutions justifying any decisions made Explain and justify the structure of the solution. Describe the parts of the solution using algorithms justifying how these algorithms form a complete solution to the problem. (c) Describe usability features to be included in the solution. (d) Identify key variables / data structures / classes justifying choices and any necessary validation. Identify the test data to be used during the iterative development and post development phases and justify the choice of this test data	Learners will be expected to analyse, design, develop, test, evaluate and document a program written in a suitable programming language. The underlying approach to the project is to apply the principles of computational thinking to a practical coding problem. Learners are expected to apply appropriate principles from an agile development approach to the project development. While the project assessment criteria are organised into specific categories, it is anticipated the final report will document the agile development process and elements for each of the assessment categories will appear throughout the report	**Algorithms** GCSE programming Link to unit 4 programming BTEC L3	Further or higher education in IT or Computer science	Problem solving Analytical skills Mathematical conversion of base numbers		Mathematics Data conversion – physics

Spring 1 Developing the solution

Provide annotated evidence of each stage of the iterative development process justifying any decision made. (b) Provide annotated evidence of prototype solutions justifying any decision made.	Learners will be expected to analyse, design, develop, test, evaluate and document a program written in a suitable programming language. The underlying approach to the project is to apply the principles of	**Algorithms** GCSE programming Link to unit 4 programming BTEC L3 Unit 9 project planning BTEC L3	Further or higher education in IT or Computer science	Analytical skills Problem solving Logical reasoning		Computer science Mathematics Life skills Data manipulation in science

Provide annotated evidence for testing at each stage justifying the reason for the test. (b) Provide annotated evidence of any remedial actions taken justifying the decision made	computational thinking to a practical coding problem. Learners are expected to apply appropriate principles from an agile development approach to the project development. While the project assessment criteria are organised into specific categories, it is anticipated the final report will document the agile development process and elements for each of the assessment categories will appear throughout the report					

Spring 2 Evaluation

Provide annotated evidence of testing the solution of robustness at the end of the development process. (b) Provide annotated evidence of usability testing (user feedback) Use the test evidence from the development and post development process to evaluate the solution against the success criteria from the analysis. Provide annotated evidence of the usability features from the design, commenting on their effectiveness Discuss the maintainability of the solution. (b) Discuss	Learners will be expected to analyse, design, develop, test, evaluate and document a program written in a suitable programming language. The underlying approach to the project is to apply the principles of computational thinking to a practical coding problem. Learners are expected to apply appropriate principles from an agile development approach to the project development. While the project assessment criteria are organised	**Algorithms** GCSE programming Link to unit 4 programming BTEC L3 Unit 9 project planning BTEC L3	Further or higher education in IT or Computer science	_Forming an argument for or against Further reading around a subject		Computer science Mathematics Data manipulation in science Literacy

potential further development of the solution.	into specific categories, it is anticipated the final report will document the agile development process and elements for each of the assessment categories will appear throughout the report					
Summer 1		revision and retrieval				
Summer 2		**revision and retrieval**				