

Computing Department (Curriculum Map 2021/2022)



	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 7	<p>Uni1 Functional Skills</p> <p>Emails and Threats Computer Security and Passwords Use of School Email Students will be introduced to being a Digital St Ivo Student via their Microsoft accounts which gives them access to Microsoft Office online package as well as their one drive accounts for personal cloud storage as well as the school cloud based vlc Microsoft Teams</p>	<p>Unit 2 ICT in Society</p> <p>Students will learn how ICT is used and embedded in every day life and society as a whole. They will explore content such as digital devices, peripheral devices, new and emerging technologies</p> <p>Links to GCSE OCR Computer Science - Unit 8 Data Representation (Sound Compression)</p>	<p>Unit 3 Digital Citizenship</p> <p>Keeping data safe. Introduction to Social Networking and Cyberbullying. This unit runs aside to Safer Internet Day in February</p> <p>They will cover topics such as Pause for People, Device Free Moments, finding a balance in the digital world and also understanding Phishing as an attack, how to prevent and identify Phishing attacks,</p> <p>Links to GCSE OCR Computer Science - Unit 5 Impacts of Digital Technology</p> <p>Links to KS4 BTEC Digital Information Technology Topic B Cyber Security</p> <p>Links to KS5 BTEC Information Technology – Unit 1 Information Systems Topic F Issues</p>	<p>Unit 4 Introduction to Information Technology (Database)</p> <p>Students will learn how to create a relational database</p> <p>They will be introduced to core database knowledge such as running queries, data validation and creating an efficient database</p> <p>Technical skills in this unit are developed to create a foundation of skills to build upon that will support the learning and skills required for the KS5 BTEC Level 3 Information Technology external assessment Unit 2 Creating Systems to Manage Information</p> <p>Links to KS5 BTEC Information Technology – Unit 2 Creating Systems to Manage Information</p>	<p>Unit 5 Introduction to Information Technology (Spreadsheet)</p> <p>Understand what a Data Model is.</p> <p>Explain the benefits of Data Modelling Develop technical skills to perform calculations using Formulae and Functions</p> <p>Technical skills in this unit are developed to create a foundation of skills to build upon that will support the learning and skills required for the KS4 internal assessment unit for BTEC Digital Information Technology Component 02 Collecting, Presenting and Interpreting Data. These skills then get further developed ready for the KS5 BTEC Level 3 Information Technology internal assessment Unit 5 Data Modelling.</p> <p>Links to KS4 BTEC Digital Information Technology – Component 02 Collecting, Presenting and Interpreting Data</p> <p>Links to KS5 BTEC Information Technology – Unit 5 Data Modelling (Coursework)</p>	<p>Unit 6 Introduction to Programming via Microsoft Small Basic</p> <p>Students will be introduced to the language and understanding the basic language syntax</p> <p>They will understand the programming construct of Iteration and using a For Loop</p> <p>They will interrogate the text window and how it works to write and execute code.</p> <p>This unit will act as an entry point to also understanding basic syntax errors, debugging and assigning values to a variable.</p> <p>Links to GCSE OCR Computer Science Unit 6 – Algorithms Unit 7 – Programming</p>

Year 8	<p>Unit 1 Computational Thinking</p> <p>Students will understand the basics of computational thinking.</p> <p>They will develop their ability to abstract information and use decomposition to break a problem down into smaller more manageable chunks</p> <p>Students will also be introduced to Logic gates, studying AND, OR and the NOT gate</p> <p>They will also develop their understanding of what an algorithm is</p> <p>Links to GCSE OCR Computer Science Unit8 Logic and Languages</p>	<p>Unit Introduction to Python</p> <p>Students will be introduced to core programming fundamentals such as identifying and debugging syntax errors and logic errors.</p> <ul style="list-style-type: none"> They will look at the basics of Python with regards to coding a simple Input Statement, Output Statement Students will develop code that will assign a value to a variable via a user input They will also write basic code that shows an understanding of Casting, Selection and Iteration <p>Links to GCSE OCR Computer Science Unit 7 – Programming</p> <p>Links to KS5 A Level Computer Science for NEA Programming Project and Programming units.</p>	<p>Unit 3 Digital Citizenship</p> <p>Name the major Acts concerning computer use</p> <p>Describe briefly some of the dangers of putting personal data on social networking sites and ways of protecting online identity</p> <p>Identify some of the signs of fraudulent emails and respond appropriately</p> <p>List some of the Health and Safety hazards associated with computer use</p> <p>Links to BTEC KS4 Digital Information Technology Topic B Cyber Security</p> <p>Links to KS5 A Level Computer Science for Unit 9 - Legal, moral, ethical and cultural issues</p> <p>Links to KS5 BTEC L3 Information Technology Topic F Issues</p> <p>Links to GCSE OCR Computer Science - Unit 5 –Impact of Digital Technology</p>	<p>Unit 4 Information Technology Next Steps – Cyber Security</p> <p>Students will develop an understand of threats to IT systems to both individuals and organisations</p> <p>They will cover system attacks and external threats. Students will then develop an understand of how internal threats have impacts and what these impacts are.</p> <p>They will also learn about user restrictions and how to identify weaknesses in IT systems as well as how data is protected. Within this unit they will also learn about policy making, backups and data recovery</p> <p>Links to BTEC KS4 Digital Information Technology Topic B Cyber Security</p> <p>Links to KS5 A Level Computer Science for Unit 9 - Legal, moral, ethical and cultural issues</p> <p>Links to KS5 BTEC L3 Information Technology Topic F Issues</p> <p>Links to GCSE OCR Computer Science - Unit 5 –Impact of Digital Technology</p>	<p>Unit 5 Computer Science Next Steps</p> <p>Students will carry on from the last unit of Unit 1 Computational Thinking with Ethical issues in this unit</p> <p>They unit is aimed to introduce students to GCSE Computer Science topics so they have an experience of it moving into Year 9 for their Option Choices</p> <p>Students will cover abstraction, decomposition and algorithm, developing on Unit 1 Computational Thinking. They will also learn how networks function, the cpu and how it works as well as developing their learning of Logic Gates</p> <p>Links to GCSE OCR Computer Science - Unit 5 – Impact of Digital Technology Unit 1 Systems Architecture Unit 3 Network Connrctions and protocols</p> <p>Links to KS5 BTEC L3 Information Technology Topic B Transmitting Data</p>	<p>Unit 6 Programming</p> <p>Independent Work</p> <p>Students will access the Hour of Code Website and choose from a range of online tasks to develop sequencing, logical thinking and problem solving skills to complete a range of activities.</p> <p>Within this Unit, students will so learn how coding can be used to affect a physical output, in this case the BBC Microbit.</p> <p>Links to GCSE OCR Computer Science Unit 6 – Algorithms Unit 7 – Programming</p>
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Year 9	<p>Unit 1 GCSE Computer Science</p> <p>In this unit students will dive deeper into understand the fetch decode and execute cycle from Unit 5 in Year 8 and the CPU.</p> <p>They will also apply mathematical knowledge to understanding Binary and Denary conversion with HEX, moving on to understanding how characters are stored.</p> <p>They will then look at algorithms and flowcharts, developing their Unit 2 Introduction to Python knowledge from Year 8 to interpret algorithms</p> <p>Links to GCSE OCR Computer Science Unit 1 Systems Architecture Unit 6 Algorithms Unit 3 Network and Protocols Unit 2 Data representation</p>	<p>Unit 2 BTEC Digital Information Technology</p> <p>This unit is designed to introduce students to content covered in Component 02 User Interfaces and particularly laying foundation technical skills for the Learning Aim C assignment (BTEC Digital Information Technology)</p> <p>Students will explore different types of user interfaces, understand key design principles such as house style, use of fonts, accessibility and user requirements. They will then plan and create their own interface to a given brief</p> <p>Links to KS4 BTEC Digital Information Technology – Component 02 Learning Aim B and C</p>	<p>Unit 3 Digital Citizen</p> <p>This unit is in line with Safer Internet Day in February</p> <p>Students will look at understanding how to be aware of what they share and the term BIG DATA</p> <p>They will also look at understanding the importance of privacy and be able to debate how young is too young for social media</p> <p>Students will finish the topic by understanding the difference between Private and Personal information</p> <p>Links to KS5 BTEC Information Technology – Unit 1 Information Systems – Topic F Issues</p>	<p>Unit 4 Information Technology NEXT STEPS – Modern Technologies</p> <p>This unit builds on their knowledge of ICT in Society in Year 7 Unit 2 and understanding cyber security in Year 8</p> <p>Students will be studying different technologies available to communicate (platforms covered in Unit 3 Digital Citizenship). They will then look at other technologies for different uses such as cloud storage and cloud computing.</p> <p>To finish the unit, students will then understand the issues surround accessibility and inclusive demands of users and the impact of modern technologies on society.</p> <p>Links to KS4 BTEC Digital Information Technology – Component 03 – Modern Technologies</p> <p>Links to GCSE OCR Computer Science Unit 5 Impact of Digital Technologies</p>	<p>Unit 5 Python Next Steps</p> <p>Building on Unit 2 Introduction to python from Year 8 students will move on to iteration and loops. They will look at For and While based on a condition</p> <p>Students will then look at arrays and lists with an introduction to functions within Python</p> <p>These topics will provide a stronger basis for students going into GCSE Computer Science and develop students ability to code independently.</p> <p>The key aim is to target those who are confirmed as taking GCSE Computer Science and provide students the opportunity to showcase their ability to code independently.</p> <p>Links to GCSE OCR Computer Science Unit 7 Programming</p>	<p>Summer Programming Tasks</p> <p>Students who have opted to do the GCSE Computer Science will be given a targeted Programming Brief to bridge technical skills from KS3 to GCSE Computer Science with Python.</p> <p>Non Computer Science students will carry out a range of the following tasks:</p> <ul style="list-style-type: none"> • Microbit – Programming a Microbit to display messages and symbols on all forms of input • Hour of Code • Produce a scrolling game on Scratch <p>Links to GCSE OCR Computer Science Unit 7 Programming</p>

Key Stage 4

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
BTEC Digital Information Technology						
Year 10	<p>Component 01 - Exploring User Interface Design</p> <p>Assignment 1: Investigate user interface design for individuals and organisations</p>	<p>Component 01 - Exploring User Interface Design</p> <p>Assignment 1: Investigate user interface design for individuals and organisations</p>	<p>Component 01 - Exploring User Interface Design</p> <p>Assignment 2: Use project planning techniques to plan and design a user interface</p>	<p>Component 01 - Exploring User Interface Design</p> <p>Assignment 2: Use project planning techniques to plan and design a user interface</p> <p>Assignment 3 - Develop and review a user interface</p> <p>Year 10 Mock Exams</p>	<p>Component 03 - Digital Working Practices</p> <p>Topic A – Modern Technologies</p>	<p>Component 03 - Digital Working Practices</p> <p>Topic B – Cyber Security</p>
Year 11	REVISION OF UNITS					
	<p>Component 03 - Digital Working Practices Topic C – Implications of Digital Systems</p> <p>Component 02 - Collecting, Presenting and Interpreting Data Assignment 1: Investigate the role and impact of using data on individuals and organisations</p>	<p>Component 03 - Digital Working Practices Topic D – Planning and Communication</p> <p>Component 02 - Collecting, Presenting and Interpreting Data Assignment 1: Investigate the role and impact of using data on individuals and organisations</p>	<p>Topic A – Modern Technologies</p> <p>Topic B – Cyber Security</p> <p>Topic C – Implications of Digital Systems</p> <p>Topic D – Planning and Communication</p> <p>Component 02 - Collecting, Presenting and Interpreting Data Assignment 2: Create a dashboard using data manipulation tools</p> <p>Assignment 3: Draw conclusions and review data presentation methods</p>	<p>Topic A – Modern Technologies</p> <p>Topic B – Cyber Security</p> <p>Topic C – Implications of Digital Systems</p> <p>Topic D – Planning and Communication</p> <p>Component 02 - Collecting, Presenting and Interpreting Data Assignment 2: Create a dashboard using data manipulation tools</p> <p>Assignment 3: Draw conclusions and review data presentation methods</p>	<p>Revision of all Units until Exam is taken.</p>	

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	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
OCR GCSE COMPUTER SCIENCE J277						
Year 10	Unit 6 – Algorithms	Unit 7 Programming	Unit 8 Logic and languages	Unit 1 – Systems Architecture Year 10 Mock Exams	Unit 5 Impacts of Digital Technology Unit 2 Data Representation	Unit 3 Networks Connections and Protocols Students will develop required skills during the summer term in preparation for the programming project to be undertaken in Year 11
Year 11	REVISION OF UNITS				Revision of all Units until Exam is taken.	
	Unit 4 – Network Security and Systems	Unit 6 – Algorithms Unit 7 Programming Year 11 Mock Exams	Unit 8 Logic and languages Unit 1 – Systems Architecture Unit 5 Impacts of Digital Technology	Unit 2 Data Representation Unit 3 Networks Connections and Protocols		

Key Stage 5 (6th Form)

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
A Level Computer Science						
Year 12	<p>1.1 The characteristics of contemporary processors, input, output and storage devices</p> <p>1.1.1 Structure and function of the processor 1.1.2 Types of processor 1.1.3 Input, output and storage</p> <p>1.2 Software and software development</p> <p>1.2.1 Systems Software 1.2.2 Applications Generation 1.2.3 Software Development 1.2.4 Types of Programming Language</p>	<p>1.3 Exchanging data</p> <p>1.3.1 Compression, Encryption and Hashing 1.3.2 Databases 1.3.3 Networks 1.3.4 Web Technologies</p> <p>1.4 Data types, data structures and algorithms</p> <p>1.4.1 Data Types 1.4.2 Data Structures 1.4.3 Boolean Algebra</p>	<p>1.5 Legal, moral, cultural and ethical issues</p> <p>1.5.1 Computing related legislation 1.5.2 Moral and ethical Issues</p>	<p>Revision and recap of Component 01</p>	<p>2.2 Problem solving and programming</p> <p>How computers can be used to solve problems and programs can be written to solve them (Learners will benefit from being able to program in a procedure/imperative language and object oriented language.)</p> <p>Introduction to NEA 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.</p>	
Year 13	<p>2.1 Elements of computational thinking</p> <p>2.1.1 Thinking abstractly 2.1.2 Thinking ahead 2.1.3 Thinking procedurally 2.1.4 Thinking logically 2.1.5 Thinking concurrently</p> <p>Continuation of NEA</p> <p>3.2.1 Decompose the problem 3.2.2 Describe the solution 3.2.3 Describe the approach to testing</p>	<p>2.3 Algorithms</p> <p>2.3.1 Algorithms</p> <p>Continuation of NEA</p> <p>3.2.1 Decompose the problem 3.2.2 Describe the solution 3.2.3 Describe the approach to testing</p>	<p>Continuation of NEA</p> <p>3.3.1 Iterative development process 3.3.2 Testing to inform development</p>	<p>Continuation of NEA</p> <p>3.4.1 Testing to inform evaluation 3.4.2 Success of the solution 3.4.3 Describe the final product 3.4.4 Maintenance and development</p> <p>HAND IN OF PROGRAMMING PROJECT NEA</p>	<p>Revision and recap of Component 01 and Component 02</p>	

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	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
BTEC Information Technology Level 3						
Year 12	<p>Unit 3 Social Media in Business Students will complete Learning Aim A for the coursework.</p> <p>Unit 2 – Creating Systems to Manage Information</p>	<p>Unit 2 – Creating Systems to Manage Information</p>	<p>Students will be entered into the January exam for Unit 2 Creating Systems to Manage Information</p> <p>Unit 3 Social Media in Business Students will complete Learning Aim B and C for the coursework.</p>	<p>Unit 3 Social Media in Business Students will complete Learning Aim B and C for the coursework.</p>	<p>Unit 3 Social Media in Business Students will complete Learning Aim B and C for the coursework.</p> <p>Retake Opportunity Students will be entered into the June exam for Unit 2 Creating Systems to Manage Information</p>	<p>Students will complete work to develop practical skills ready for Unit 6 Website Development in Year 13</p>
Year 13	<p>Unit 6 Website Development Students will complete Learning Aim A for the coursework</p> <p>Unit 1 Information Technology Systems Topic A – Digital Devices in IT Systems Topic B – Transmitting Data Topic C – Operating Online</p>	<p>Unit 1 Information Technology Systems Topic D – Protecting Data and Information Topic E – Impact of IT Systems Topic F – Issues</p>	<p>Students will be entered into the January exam for Unit 1 Information Technology Systems</p> <p>Unit 6 Website Development Students will complete Learning Aim B and C for the coursework.</p>	<p>Unit 6 Website Development Students will complete Learning Aim B and C for the coursework.</p> <p>Retake Opportunity Students will be entered into the June exam for Unit 1 Information Technology Systems</p>		