

COMPUTER SCIENCE CURRICULUM

Our aim in computing is to inspire students as pioneers of the future, and to nurture a love of the subject. The Computing Department aims to equip all students with the ability to use computational thinking and creativity when understanding and developing their ability to be positive and engaged citizens of the modern world. As computer systems pervade every aspect of our lives, our society needs individuals and groups who can ensure that computational thinking, problem-solving, and innovation are at the forefront of societal development.

In practice, this means that students need to see the wider picture and to relate their learning to the real world and possible career paths. They need to become digitally literate and digitally resilient. We will achieve this by teaching them to understand and apply the fundamental principles and concepts of Computing. This knowledge will be embedded through the learning of key concepts and terminology, by analysing problems in computational terms, and through practical experience of writing computer programs in order to solve problems. Students will learn to think creatively, innovatively, analytically, logically, critically to evaluate and apply information technology, whilst also investigating and interrogating unfamiliar and new technologies. Students will become competent and creative users of computing– in both home and work contexts. Ultimately, we are aiming to teach and support our students to be responsible, knowledgeable innovators of digital systems and technology.

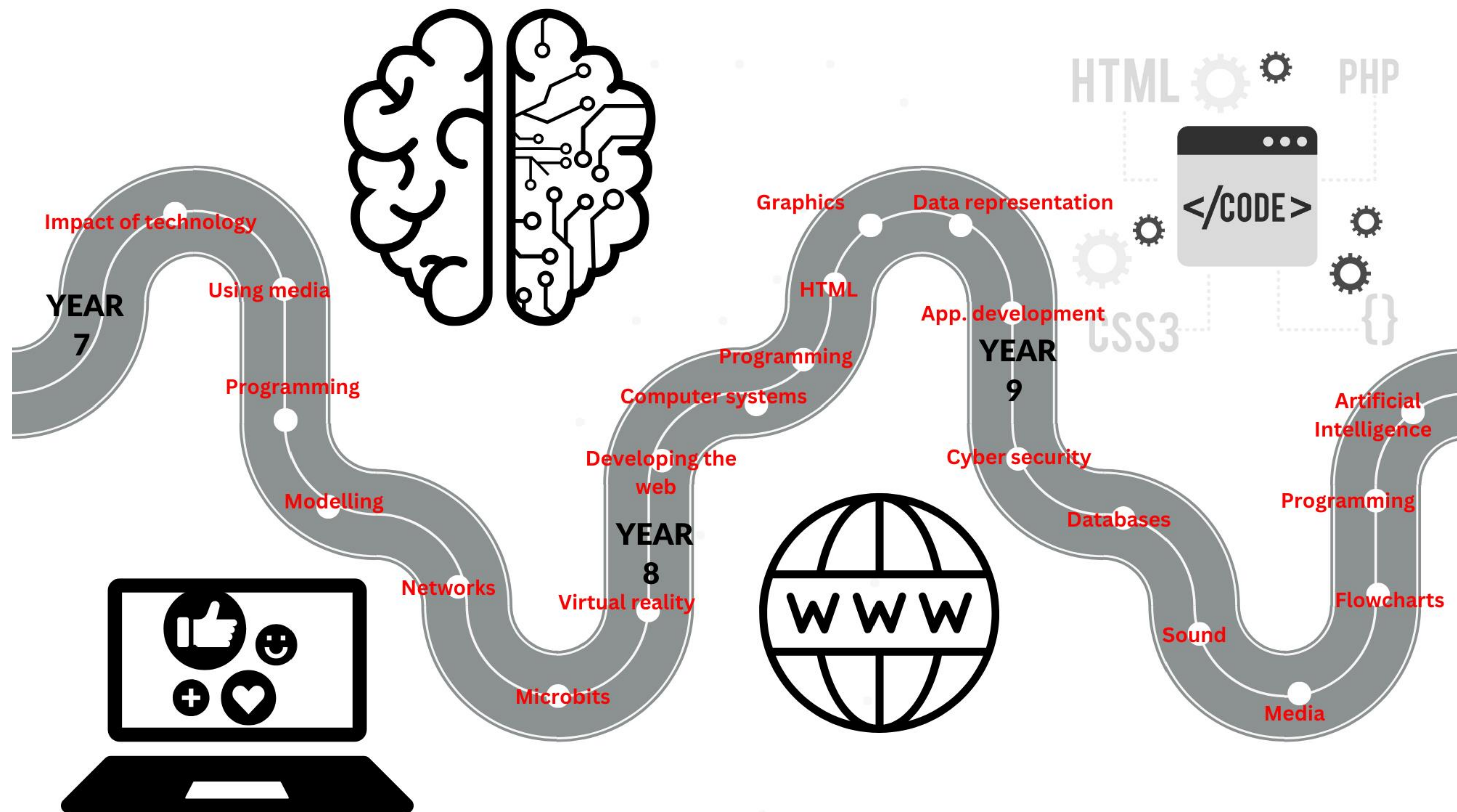
The nature of the computing curriculum considers three strands: Computer science, Information Technology, and digital literacy. By including these in our curriculum design, we create the opportunity for a broad and balanced curriculum, ensuring that students can develop their understanding and knowledge with a means to expressing themselves, to looking towards success in the future, and to being active participants in a digital world. Digital safety awareness is taught throughout the year in each year to remind students how to use technology safely, respectfully, responsibly, and securely. This prepares our students as they progress through a range of topics in the classroom while ensuring they have the knowledge to protect themselves online and know how to report concerns.

Teaching and Learning Sequence

This is a new curriculum and has been developed by computing professionals as part of the government-supported National Centre for Computing Education project. These units have been adapted to meet the needs of students at Great Academy Ashton and we also utilise units to create video/at-home learning materials which will continue to enhance learning moving forward. Our intention at Great Academy Ashton is to ensure our students have:

- An ambitious curriculum where all students can gain the knowledge and cultural capital they need to succeed in life.
- A coherently planned and sequenced curriculum that allows for knowledge and skills for future learning and employment.
- A broad and balanced curriculum.

Our curriculum is always evolving to ensure that it meets these intentions, and in recognition of the ever-evolving technological advancements in the world setting out to meet the wide range of abilities and learning styles of each child at Great Academy Ashton.



KS3 COMPUTER SCIENCE CURRICULUM



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Year 7						
Autumn Term		Spring Term		Summer Term		
Unit Title: Impact of technology (7 Lessons)	Unit Title: Using Media (7 Lessons)	Unit Title: Programming (6 Lessons)	Unit Title: Modelling (5 Lessons)	Unit Title: Networks (6 Lessons)	Unit Title: Micro Bits (5 Lessons)	Unit Title: Virtual Reality (2 Lessons)
Domains of knowledge: E-safety Digital Literacy Problem solving		Domains of knowledge: Algorithms Programming concepts Testing and debugging Problem solving		Domains of knowledge: Algorithms Programming concepts Networks		
Key Concepts: Digital Literacy: E-safety, impact of social media comments, using office online, searching online, legislation, impact of digital media. Communication and Coordination: WWW, internet, communication online.		Key Concepts: Problem Solving: algorithms, selection, IF statements, errors. Algorithms: interpret algorithms, create algorithms, output an algorithm, error correction for algorithms. Mathematical concepts: formulas, addition, subtraction, multiplication, division.		Key Concepts: Programming concepts: variables, constant, inputs, outputs, iteration, Selection, sequence. Communication and coordination: network hardware, network topologies, WWW, servers, global network.		
Relevant end points covered: End Point 4 Understanding of different networks and how they communicate.		Relevant end points covered: End Point 1 Understanding of how to use algorithms to solve problems. End Point 2 Be able to use computer programs to use code.		Relevant end points covered: End Point 1 Understanding of how to use algorithms to solve problems. End Point 2 Be able to use computer programs to use code. End Point 4 Understanding of different networks and how they communicate. End Point 5 Understanding of different security issues and how to deal with them.		
Assessment: End of unit test 1		Assessment: End of unit test 2		Assessment: End of unit test 3		

Year 8						
Autumn Term		Spring Term		Summer Term		
Unit Title: Developing the web (7 Lessons)	Unit Title: Computer Systems (7 Lessons)	Unit Title: Programming (6 Lessons)	Unit Title: HTML (3 Lessons)	Unit Title: Graphics (3 Lessons)	Unit Title: Data Representation (5 Lessons)	Unit Title: App Development (7 Lessons)
Domains of knowledge: E-safety Digital Literacy Problem solving Hardware		Domains of knowledge: Algorithms Programming concepts Testing and debugging Problem solving Digital Literacy		Domains of knowledge: Problem solving Data representation Digital Literacy		
Key Concepts Digital Literacy: E-safety (online racism, online gambling, filming violence.), coming off social media, blocking and reporting. communication and coordination: www, website creation, online forms. machines and software: hardware, inputs and outputs, primary and secondary storage, operating systems, computer logic.		Key Concepts Problem Solving: algorithms, selection, if statements, errors. programming concepts: variables, constant, inputs, outputs, iteration, selection. algorithms: interpret algorithms, create algorithms, output an algorithm, error correction for algorithms. Communication and Coordination: WWW, website creation.		Key Concepts Digital Literacy: App development, adding files, adding images, adding links. Mathematical concepts: binary, denary, binary addition, units of data.		
Relevant end points covered: End Point 4 Understanding of different networks and how they communicate. End Point 5 Understanding of different security issues and how to deal with them. End Point 6 Be able to explain the different hardware in computers and how they work together.		Relevant end points covered: End Point 1 Understanding of how to use algorithms to solve problems. End Point 2 Be able to use computer programs to use code.		Relevant end points covered: End Point 3 Be able to mathematical and logical concepts to solve problems.		
Assessment: End of unit test 1		Assessment: End of unit test 2		Assessment: End of unit test 3		

Year 9						
Autumn Term		Spring Term			Summer Term	
Unit Title: Cyber security (6 Lessons)	Unit Title: Database (7 Lessons)	Unit Title: Sound (5 Lessons)	Unit Title: Media (6 Lessons)	Unit Title: Flowcharts (3 Lessons)	Unit Title: Programming (6 Lessons)	Unit Title: AI (7 Lessons)
Domains of knowledge: E-safety Digital Literacy Problem solving		Domains of knowledge: Problem solving Digital Literacy			Domains of knowledge: Algorithms Programming concepts Testing and debugging Problem solving Digital Literacy	
Key Concepts: Digital literacy: database, data, information, structured, query, and report. Problem Solving: data protection act, computer misuse act, brute force attack, trojan horse, passive attack, insider attack, denial of service, and distributed denial of service. mathematical concepts: structured and unstructured data. data can be decomposed organised and manage structured data.		Key Concepts: Digital Literacy: animation, media, global networks, Problem Solving: vector images, bitmap images, grouping, servers, and cloud.			Key Concepts: Problem solving: algorithms, selection, IF statements, errors. Programming concepts: variables, constant, inputs, outputs, Iteration, selection, sequence, while statements, arrays. Algorithms: interpret algorithms, create algorithms, output an algorithm, and error correction for algorithms. Communication and coordination: AI, machine learning model.	
Relevant end points covered: End Point 5 Understanding of different security issues and how to deal with them. End Point 3 Be able to mathematical and logical concepts to solve problems.		Relevant end points covered: End Point 1 Understanding of how to use algorithms to solve problems.			Relevant end points covered: End Point 1 Understanding of how to use algorithms to solve problems. End Point 2 Be able to use computer programs to use code.	
Assessment: End of unit test 1		Assessment: End of unit test 2			Assessment: End of unit test 3	

KS4 INFORMATION TECHNOLOGY CURRICULUM



COURSE ASSESSMENT

IT assessment.

1. Unit 1: ICT in Society (40%)
 - Assessed through an external on-screen examination lasting 1 hour and 20 minutes. This assessment evaluates students' understanding of ICT's role in society, including hardware, software, cybersecurity, and ethical considerations.
2. Unit 2: ICT in Context (60%)
 - Assessed through controlled internal tasks completed over 40 hours. Students apply their knowledge to create and manage databases, spreadsheets, automated documents, and digital images, addressing real-world scenarios.

Both units assess theoretical understanding and practical skills, ensuring a balanced evaluation of ICT competence.

COURSE DETAILS

Course: WJEC Level 1/2 Vocational Award in ICT (Technical Award)

COURSE DESCRIPTION

The WJEC Level 1/2 Vocational Award in ICT is an engaging and practical course designed to develop students' understanding of Information and Communication Technology (ICT) and its importance in modern life. Through this course, students will gain the skills and knowledge needed to use ICT effectively and creatively in a variety of real-world scenarios.

The course consists of two core units:

ICT in Society: This unit explores how ICT is integrated into everyday life and various industries, including business, education, and home environments. Students will study the functionality of hardware, software, and cybersecurity measures while considering the legal, ethical, and environmental impacts of technology.

ICT in Context: This unit focuses on practical application, where students create and manage digital solutions such as databases, spreadsheets, automated documents, and images. They will learn to plan, design, and evaluate their work, developing technical skills to solve realistic problems.

PROGRESSION ROUTES

The natural progression would be to take an A Level in computer science or one of the many other STEM subjects that it underpins like science and engineering. Computing and computer science are fast growing industries and the technology is always adapting to meet different needs. This opens the door to many different job roles from IT support to game testers and programmers.

