Biddulph High School Curriculum Intent

To deliver a broad and enriching curriculum through engaging and challenging lessons that provide a wide range of opportunities for all students to achieve their potential.

Students will all be prepared to take their next steps in a diverse and ever changing future ready to make a positive contribution to society.

Through a broad programme of extracurricular activities students will have the opportunities to showcase their talents and experience new challenges.

We value individuals and all that they can offer as well as supporting each other with kindness and empathy.

Curriculum Intent for Computing

"Those who can imagine anything, can create the impossible." Alan Turing

Our aim in the Computing department is centred around equipping students for their future, regardless of the individual pathway they may decide to choose, ensuring that students are prepared for the challenge of a rapidly developing and changing technological world. We will equip learners with the key technical skills to support their learning across the curricula, for future studies and ultimately for their chosen career pathway. We believe in delivering a mixture of both ICT and Computer Science in our curriculum to develop core employability skills, such as problem solving and critical thinking. We also develop "Internet Citizens" who understand the importance of being responsible in the digital world. Our curriculum is mapped from KS3 to KS5 ensuring that students have the opportunity to grow both their knowledge and technical skills. We will provide a variety of extra curricula activities including entering national competitions, providing opportunities for students to acquire further technical qualifications and conferences/ visits to inspire students to follow a future in technology.

All teachers will follow the schemes of work provided by the department. This will ensure that all students receive the same high-quality provision. All units of work will provide a clear outline of the knowledge and skills required and assessments will ensure that this knowledge has been retained and that skills can be evidenced.

Teachers will ensure that gaps are closed through regular monitoring within the classroom. DINT activities will allow for interleaving and recap of previous learning. Misconceptions will be identified through effective questioning and the regular inspection of student work.







Computing Long	Computing Long Term Overview						
Year Group	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2	
OCR GCSE Comp	outer Science						
10	Computational	Computational	An understanding of	An understanding of	An understanding how	Practical	
	thinking, algorithms,	thinking, algorithms,	different number	searching and sorting	data is stored within	programming -	
	programming	programming	systems used within	algorithms. They will	computer systems,	Learners will develop	
	fundamentals, data	fundamentals, data	Computer Science.	also be introduced to	and how compression	their programming	
	types and ethical,	types and ethical,	They will also consider	Boolean logic and how	be used to minimise	skills focusing on	
	legal and	legal and	types of defence and	to use logic diagrams.	the file sizes.	sequence, selection	
	environmental	environmental	testing to maintain			and iterations to	
	considerations	considerations	computer security.			solve a number of	
						problems in given	
	Booklet 1	Booklet 1	Booklet 2	Booklet 3	Booklet 4	scenarios.	
11	An understanding of	Learners will explore	Learners will discover	Learners will develop	Learners will be	N/A	
	what the CPU is	different type of	different operating	further their	revising theory and		
	responsible for, the	network topologies	systems, utility	programming skills to	practical skills during		
	difference between	and potential	software and explore	a more advanced level	this half term in		
	RAM and ROM and	network threats.	legal, environmental,	through the creation	preparation for their		
	other storage types.		cultural and ethical	of working computer	examination.		
	Different types of	Booklet 6	impacts of computing.	programs.			
	networks are also						
	explored in this topic		Booklet 7	Booklet 8			
	and basic						
	fundamentals of						
	programming.						
	Rooklot 5						
12	DOORIEL S						
14							
13							
_							



Computing: Computer Science Medium Term Overview					
Year 10	Autumn Term 1	Unit Title: Booklet 1 topics 2.1.1, 2.1.2, 2.2.1, 2.2	2, 1.6.1	No of Lessons: 15	
Overview	Learners will develop the based.	neir understanding of computational thinking and	algorithms. Lessons will	be both theory and practical	
Assessment	Students will be assesse	d continually on their practical work and will have a	a formal assessment.		
 Essential Knowledge (what if understand and apply the and concepts of Computer abstraction, decomposition data representation. analyse problems in comp practical experience of solvir including designing, writing a programs Terminology: Problem inputs, Problem pro- outputs, Structure diagram, Trace table, Searching algorit Linear search, Sorting algorit sort, Insertion sort. 	must students know): fundamental principles Science, including n, logic, algorithms, and utational terms through ng such problems, and debugging ocesses, Problem Pseudocode, Flowchart, thms, Binary search, hm, Bubble sort, Merge	 Essential Skills (what must students be able to demonstrate): Students will be able to: think creatively, innovatively, analytically, logically and critically. understand the components that make up digital systems, and how they communicate with one another and with other systems. understand the impacts of digital technology to the individual and to wider society. apply mathematical skills relevant to Computer Science 	 Lesson topics: Introduction to 0 Computational 1 Designing, Creat Creating Flowch Ethical, legal, cu considerations (Programming fu 	Computer Science Thinking ting and Refining algorithms arts Itural and environmental Piracy) Indamentals	
Careers Links: Students will look at roles su learn project planning tools t future jobs in Computing.	ch as designers and that would support	<u>Enrichment:</u> NA			



Computing: Computer Science Medium Term Overview				
Year 10	Autumn Term 2	Unit Title: Booklet 1 topics 2.1.1, 2.1.2, 2.2.1, 2.2.	2, 1.6.1 No	o of Lessons: 14
Overview	Learners will develop th based.	eir understanding of computational thinking and a	algorithms. Lessons will be l	both theory and practical
Assessment	Students will be assesse	d continually on their practical work and will have a	formal assessment.	
 Essential Knowledge (what r understand and apply the f and concepts of Computer abstraction, decomposition data representation. analyse problems in compu- practical experience of solvin including designing, writing a programs Terminology: Problem inputs, Problem pro- outputs, Structure diagram, F Trace table, Searching algorit Linear search, Sorting algorit sort, Insertion sort, Variable, Assignment, Programming co Selection, Count controlled it controlled iteration, Arithme NOT, ==, !=, <=, >, >=, +, -, *, type, Integer, Real, Boolean, Casting, String manipulation, CLOSE, Record, SQL, SELECT, Sub program, Procedure, Fur 	nust students know): Fundamental principles Science, including h, logic, algorithms, and utational terms through g such problems, and debugging cesses, Problem Pseudocode, Flowchart, hm, Bubble sort, Merge Constant, Operator, hm, Bubble sort, Merge Constant, Operator, onstruct, Sequence, teration, Condition tic operator, AND, OR, /, MOD, DIV, ^, Data Character, String, OPEN, READ, WRITE, FROM, WHERE, Array, hetion,	 Essential Skills (what must students be able to demonstrate): Students will be able to: think creatively, innovatively, analytically, logically and critically. understand the components that make up digital systems, and how they communicate with one another and with other systems. understand the impacts of digital technology to the individual and to wider society. apply mathematical skills relevant to Computer Science 	 Applying computation solve problems Practical Programming constinuence selection. Ethical, legal, cultur considerations. Programming constinuence selection. 	ional thinking methods to ning fundamentals cructs – sequence and ral and environmental cructs – iteration.
Careers Links:		Enrichment:		
		NA		



Students will look at roles su	ch as designers and					
learn project planning tools t	that would support					
future jobs in Computing.						
Computing: Computer	Computing: Computer Science Medium Term Overview					
Year 10	Spring Term 1	Unit Title: Booklet 2 – 1.2.4, 2.3.1, 2.3.2, 2.5.1, 2	.5.2	No of Lessons: 15		
Overview	Learners will develop th types of defence and te	neir understanding of different number systems us sting to maintain computer security.	sed within Computer Scie	ence. They will also consider		
Assessment						
Essential Knowledge (what r	must students know):	Essential Skills (what must students be able to	Lesson topics:			
 understand and apply the f 	fundamental principles	<u>demonstrate):</u>	Binary number :	system		
and concepts of Computer	Science, including	Students will be able to:	 Hexadecimal nu 	ımber system		
abstraction, decomposition	n, logic, algorithms, and	 think creatively, innovatively, 	IDE InterpretationPlanning Robust Programs			
data representation.		analytically, logically and critically.				
		 understand the components that make 	 Testing 	-		
 analyse problems in comp 	utational terms through	up digital systems, and how they				
practical experience of solvin	ng such problems,	communicate with one another and				
including designing, writing a	and debugging	with other systems.				
programs		 understand the impacts of digital 				
		technology to the individual and to				
Terminology:		wider society.				
Bit, Nibble, Byte, Kilobyte, M	egabyte, Gigabyte,	• apply mathematical skills relevant to				
Terabyte, Petabyte, Denary r	numbers, Binary	Computer Science				
numbers, Binary arithmetic, Overflow, Hexadecimal,						
Binary shifts, Character set, ASCII, Unicode, Pixels,						
Metadata, Colour depth, Res	olution, Image quality,					
Image file size, Sample rate						
Careers Links:		Enrichment:				
Link to jobs that involve com	puter programming	Bebra Challenge				
		Turing Challenge				



Computing: Computer Science Medium Term Overview				
Year 10	Spring Term 2	Unit Title: Booklet 3 : 2.4.1, 2.1.3, 1.2.4	No of Lessons: 14	
Overview	Learners will develop t	heir understanding of searching and sorting algori	thms. They will also be introduced to Boolean logic and	
	how to use logic diagra	ims		
Assessment				
Essential Knowledge (what r	nust students know):	Essential Skills (what must students be able to	Lesson topics:	
 understand and apply principles and concept including abstraction, algorithms, and data r analyse problems in compu- practical experience of solvin including designing, writing a programs Terminology: Logic diagram, Logic gate, AN table, Variable, Constant, Op Programming construct, Seque controlled iteration, Conditio Arithmetic operator, AND, OI +, -, *, /, MOD, DIV, ^, Data ty Boolean, Character, String, Ca manipulation, OPEN, READ, W SQL, SELECT, FROM, WHERE, Procedure, Function. 	 the fundamental the fundamental the fundamental the fundamental the fundamental terms of Computer Science, decomposition, logic, epresentation. utational terms through g such problems, and debugging ID, OR, NOT, Truth erator, Assignment, uence, Selection, Count on controlled iteration, R, NOT, ==, !=, <=, >, >=, ype, Integer, Real, asting, String VRITE, CLOSE, Record, Array, Sub program, 	 demonstrate): Students will be able to: think creatively, innovatively, analytically, logically and critically. understand the components that make up digital systems, and how they communicate with one another and with other systems. understand the impacts of digital technology to the individual and to wider society. apply mathematical skills relevant to Computer Science 	 Boolean Logic Circuits Searching Algorithms Sorting Algorithms Binary Addition 	



Careers Links:		Enrichment:		
Students will look at roles such as designers and		NA		
learn project planning tools that would support				
future jobs in Computing.				
Computing: BTEC Digital IT Medium Term Overview				
Year 10	Summer Term 1	Unit Title: Booklet 4: 1.2.4 Data Storage, 1.2.5 Co	ompression	No of Lessons: 15
Overview	Learners will understan	d how data is stored within computer systems, ar	nd how compres	sion be used to minimise the file sizes.
Assessment		I	I	
Essential Knowledge (what i	<u>must students know):</u>	Essential Skills (what must students be able to	Lesson topics:	
		<u>demonstrate):</u>	1.	Storing Characters
 understand the componen 	ts that make up digital	Students will be able to:	2.	Storing Images
systems, and how they comr	nunicate with one	 think creatively, innovatively, 	3.	Storing Sound
another and with other syste	ems	analytically, logically and critically.	4.	Compression
		 understand the components that make 		
		up digital systems, and how they		
Terminology:		communicate with one another and		
Bit, Nibble, Byte, Kilobyte, M	legabyte, Gigabyte,	with other systems.		
Terabyte, Petabyte, Denary r	numbers, Binary	 understand the impacts of digital 		
numbers, Binary arithmetic,	Overflow, Hexadecimal,	technology to the individual and to		
Binary shifts, Character set, A	ASCII, Unicode, Pixels,	wider society.		
Metadata, Colour depth, Res	solution, Image quality,			
Image file size, Sample rate,	Sample duration,			
Sample bit depth, Playback o	uality, Sound, file size,			
Compression, Lossy compression, Lossless				
compression				
Careers Links:		Enrichment:		
Students will look at roles su	ch as designers and	NA		
learn project planning tools t	that would support			
future jobs in Computing.				



Computing: BTEC Digital IT Medium Term Overview							
Year 10	Summer Term 2	Unit Title: Practical Programming Skills		No of Lessons: 25			
Overview	Learners will develop the	neir programming skills focusing on sequence, sele	eir programming skills focusing on sequence, selection and iterations to solve a number of problems in				
	given scenarios.						
Assessment	Mock Examination	r					
Essential Knowledge (what r	<u>must students know):</u>	Essential Skills (what must students be able to	Lesson topics:				
 understand and apply the f 	fundamental principles	<u>demonstrate):</u>	 Sequence progra 	amming			
and concepts of Computer	Science, including	Students will be able to:	 Selection progra 	mming			
abstraction, decomposition	n, logic, algorithms, and	 Understand how to write a program 	 Iteration 				
data representation		from a flow diagram and pseudocode.	 String manipulat 	tion			
		 Understand the OCR reference 	 Problem solving 				
Terminology:		language.					
Variable, Constant, Operator	r, Assignment,	 Understand how to interpret 					
Programming construct, Seq	uence, Selection, Count	algorithms.					
controlled iteration, Condition	on controlled iteration,	 Understand how to correct algorithms. 					
Arithmetic operator, AND, O	R, NOT, ==, !=, <=, >, >=,	 Know what a syntax error is. 					
+, -, *, /, MOD, DIV, ^, Data t	ype, Integer, Real,	 Know what a logic error is. 					
Boolean, Character, String, C	asting, String	• Know how identify simple syntax and					
manipulation, OPEN, READ, \	WRITE, CLOSE, Record,	logic errors in high-level code and the					
SQL, SELECT, FROM, WHERE,	Array, Sub program,	OCR reference language.					
Procedure, Function,		 Understand how to suggest fixes to 					
		code by spotting syntax and logic errors					
Careers Links:		Enrichment:					
Programming.		Bebras Challenge					
-		Hour of code					



Computing: Computer Science Medium Term Overview				
Year 11	Autumn Term 1	Unit Title: Booklet 5 – 1.1.1, 1.1.2, 1.1.3, 1.2.1, 1.2	2.2, 1.2.3	No of Lessons: 25
Overview	Learners will develop t	heir understanding of what the CPU is responsible f	or, the difference betwe	en RAM and ROM and other
	storage types as well as	basic fundamentals of programming.		
Assessment				
	Mock examination			
Essential Knowledge (what	<u>must students know):</u>	Essential Skills (what must students be able to	Lesson Topics:	
• understand and apply the	fundamental principles	<u>demonstrate):</u>	 Systems are 	hitecture
and concepts of Computer	Science, including	Students will be able to:	 Memory ar 	nd storage
abstraction, decompositio	n, logic, algorithms, and		 Programmi 	ng fundamentals
data representation.		 Know the stages of the fetch, execute cycle. 	AlgorithmsProducing r	obust programs
 analyse problems in comp 	outational terms through	• Explain what a CPU does.	0	1 0
practical experience of solvi	ng such problems,	• Explain what factors affect the speed of		
including designing, writing	and debugging	a CPU.		
programs		• Know the different variable data types.		
Terminology:		 Understand the need for casting. 		
CPU, Fetch execute cycle, AL	U, CU, Cache, Register,	• Know the arithmetic operators.		
Von Neumann architecture,	MAR, MDR, Program	 Know the Boolean operators. 		
counter, Accumulator, Clock	speed, Cache size,	• Know the comparison operators.		
Cores, Embedded system		 Understand how to use computer- 		
		related mathematic operators.		
		 Understand basic string manipulation 		
		commands.		
Careers Links:		Enrichment:		
Students will look at roles su	ich as designers and	NA		
learn project planning tools	that would support			
future jobs in Computing.				



Year 11	Autumn Term 2	Unit Title: Booklet 6: 1.3.1, 1.3.2, 1.4.1, 1.4.2	No of Lessons: 25
Overview	Learners will explore d	ifferent type of network topologies and potential	network threats.
Overview Assessment Essential Knowledge (what if understand the component systems, and how they common the and with other system understand the impacts of the individual and to wider state Terminology LAN, WAN, Client-server net network, Wireless access po Transmission media, The Inte cloud, Web server, Client, Ne topology, Mesh topology, W Ethernet, Wireless connection Encryption, IP address, MAC Protocol, TCP/IP, HTTP, HTTP	Learners will explore d Do It Now Task – mini te must students know): ts that make up digital municate with one ems digital technology to ociety work, Peerto-peer int, Router, Switch, NIC, ernet, DNS, Hosting, The etwork topology, Star ired connection, on, WiFi, Bluetooth, address, Standards, PS, FTP, POP, IMAP,	 ifferent type of network topologies and potential ests. End of topic assessment. Essential Skills (what must students be able to demonstrate): Students will be able to: Know what is meant by 'stand-alone' computers. Know the different types of networks: LAN and WAN. Understand the advantages of networking. Understand the implications of networking. Know what a client-server model is. Know what a peer-to-peer model is. Understand the different roles computers have in each model Understand the different forms of attack to computer systems 	network threats. Lesson topics: Computer networks, connections and protocols Network security Network Topologies Cloud computing Network protocols DNS
SMTP, Protocol layering		 Understand the threat non-malware. Understand how to identify and protect against malware 	
Careers Links:		Enrichment:	
Students will look at roles su	ch as cyber crime	NA	
professionals and lawyers ar	nd network engineers.		



Year 11	Spring Term 1	Unit Title: Booklet 7- 1.5.1, 1.5.2, 1.6.1		No of Lessons: 25	
Overview	Learners will discover o	lifferent operating systems, utility software and explore legal, environmental, cultural and ethical impacts			
	of computing.				
Assessment					
	Mock examination 2				
Essential Knowledge (what r	must students know):	Essential Skills (what must students be able to	Lesson topics:		
 understand the component 	ts that make up digital	<u>demonstrate):</u>	 Ethical and legal 	considerations	
systems, and how they comr	municate with one	Students will be able to:	 Legislation 		
another and with other syste	ems	 Know a range of things to consider 	 Software Owners 	ship	
 understand the impacts of 	digital technology to	beyond development when	 Operating System 	ns	
the individual and to wider s	ociety	implementing new computer systems.	Utility Software		
I erminology:	avatana llaan intanfaas	 Understand at least one ethical issue of 			
Systems software, Operating	system, User Interface,	computer technology			
Wemory management, Mult	itasking, Peripheral	 Understand at least one issue related 			
management, Driver, Oser m	anagement, File	to privacy and computer technologies			
Defragmentation software	e, Encryption, software,	Know the principles of the Acts of			
software Ethical issues Lega		Parliament:			
Environmental issues Privac	v issues. The Data	o Data Protection Act 2018			
Protection Act 2018, Comput	ter Misuse Act 1990.	o Computer Misuse Act 1990			
Copyright Designs and Paten	ts Act 1998, Software	1988			
licences, Open source, Propr	ietary	• Know the purpose and functionality of			
		operating systems.			
		Know the different types of user			
		interface and understand the features			
		of each.			
		 Understand encryption utilities. 			
		 Understand defragmentation utilities. 			
		Understand data compression utilities			
Careers Links:		Enrichment:			
Work within business and so	ftware development.	NA			



Year 11	Spring Term 2	Unit Title: Booklet 8 – Advanced Practical Program	mming	No of Lessons: 25		
Overview	Learners will develop fu	rther their programming skills to a more advanced	d level.			
	Creation of working com	Creation of working computer programs.				
Assessment						
Essential Knowledge (what r	<u>must students know):</u>	Essential Skills (what must students be able to	Lesson topics:			
 understand and apply the f 	undamental principles	<u>demonstrate):</u>				
 and concepts of Computer Science, including abstraction, decomposition, logic, algorithms, and data representation analyse problems in computational terms through practical experience of solving such problems, including designing, writing and debugging programs Terminology: Problem inputs, Problem processes, Problem outputs, Structure diagram, Pseudocode, Flowchart, Trace table. Searching algorithms, Pinamu coarch 		 Students will be able to: Understand how to solve computational problems by applying algorithmic thinking. Understand the linear search algorithm. Understand it is not an efficient algorithm, but it is easier to program than alternatives and does not require the items to be in any order. Functions String mathematical String mathematical String mathematical SQL Lists External 		nd procedures pulation ays a		
Linear search, Sorting algorit sort, Insertion sort.	hm, Bubble sort, Merge	Enrichment:				
Programmers		NA				

Year 11	Summer Term 1	Unit Title: Revision		No of Lessons: 12
Overview	Learners will be revisin	ig theory and practical skills during this half term in preparation for their exa		amination.
Assessment				
Essential Knowledge (what	<u>must students know):</u>	Essential Skills (what must students be able to	Lesson topics:	
• understand and apply the f	fundamental principles	<u>demonstrate):</u>		
and concepts of Computer Science, including		Students will be able to: • These will		e based on the gaps of the
abstraction, decomposition, logic, algorithms, and		Develop effective revision techniques learners in the class		the class
data representation		to close their curriculum gaps		



 analyse problems in computational terms through practical experience of solving such problems, including designing, writing and debugging programs think creatively, innovatively, analytically, logically and critically understand the components that make up digital systems, and how they communicate with one another and with other systems understand the impacts of digital technology to the individual and to wider society apply mathematical skills relevant to Computer Science. 		
<u>Careers Links:</u> N/A	Enrichment: NA	