Computer Science Curriculum Map 2025/26

Our specialisms: Fundamentals of components of a computer, networking & the internet, programming and Different way computers represent data.

KS3 Computer Science

Over three years, students build a strong foundation in computer science, exploring a variety of essential topics and skills. They learn about e-safety, the inner workings of computer components, malware, laws affecting technology, logic gates, and network topologies. Alongside technical knowledge, students also examine important legal and ethical issues such as intellectual property, data protection, and online privacy. By Year 9, the focus shifts to programming fundamentals, algorithms, pseudocode, and deeper understanding of hardware, software, digital systems, and programming languages, with Python.

KS4 GCSE Computer Science

In Years 10 and 11, students dive deeper into computer science with a comprehensive curriculum covering programming, algorithms, data representation, computer systems, databases, cybersecurity, and emerging topics like artificial intelligence. Year 10 builds a strong grasp of core concepts and introduces advanced areas like databases and system architecture. Year 11 is hands-on, with practical programming projects, real-world problem solving, and revision to prepare for the formal written exam. This rigorous program equips students with the skills and knowledge they need for further study or a career in technology.

KS5 A Level Computer Science

At A-Level, students deepen their understanding of computer science through a rigorous and engaging curriculum designed to prepare them for higher education and careers in tech. They explore advanced topics such as software development, system architecture, algorithms, and data structures in greater detail. Students also study programming paradigms, computational thinking, and problem-solving techniques, with a strong emphasis on developing efficient, maintainable code. Practical programming projects are a key part of the course, allowing students to apply their knowledge and showcase their skills. The course covers crucial themes like cybersecurity, ethical considerations in computing, databases, and modern technologies including artificial intelligence and machine learning. Assessment includes written exams focusing on theory and problem-solving, alongside a substantial programming project that demonstrates the student's ability to design, develop, test, and evaluate software solutions. This comprehensive course equips students with both the theoretical knowledge and practical skills essential for success in computer science degrees or technology-focused careers.

Term	Autumn 1	Autumn 2	e L	Spring 1	Spring 2	F :	Summer 1	Summer 2	
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	Computer		Practical	Practical	Malware	
	Fundamentals	E-Safety	assessment	assessment	Learn about	Al Introduction
		· · · · · · · · · · · · · · · · · · ·	This topic	This topic	malicious	
	This topic	Learn how to protect	introduces	introduces	software that	An overview of
	teaches	yourself and others	students to	students to		artificial
		online by	Scratch, a	Scratch, a	can harm	intelligence
	students how	understanding safe	visual	visual	computers	and its impact
	to use a	practices, privacy			and how to	on technology
	computer,	settings, and	programming language that	programming language that	protect	and daily life.
	including	responsible			against it.	
	logging in,	behaviour on the	teaches	teaches		Software
	opening	internet.	coding basics	coding basics	Hacking	Learn about
	applications		through drag-	through drag-	Understand	different types
	• •	Digital Factorial	and-drop	and-drop		
	like Word,	Digital Footprint	blocks.	blocks.	what hacking	of software
	accessing	Explore how your	Students	Students	is, why it	and how they
	email and	online actions leave	create	create	happens, and	work with
	OneDrive, and	a permanent record,	animations,	animations,	ways to keep	hardware.
	saving files.	affecting your	games, and	games, and	systems	
	=	reputation and	stories while	stories while	secure.	People of
	Learning to Use	privacy, and learn	learning key	learning key		Computer
	Microsoft Word	how to manage it	concepts like	concepts like	Components	Science
	Microsoff Word	wisely.	sequences,	sequences,	of a Computer	Discover
	This topic		loops, and	loops, and		influential
	·	Passwords	conditionals in	conditionals in	Explore the	
	introduces	Discover the	a fun and	a fun and	main parts of a	figures who have shaped
	students to		interactive	interactive	computer and	the field of
	Microsoft Word,	importance of	way.	way.	their functions.	
	focusing on	creating strong,	wuy.	way.		computer
Year	basic features	secure passwords to			Revision for	science.
	such as	protect your personal			Test	
7	creating,	and online accounts			Review key	EOY
	editing, and	from unauthorized			topics to	
	formatting	access.			•	
					prepare for the	
	documents.	Phishing –			upcoming	
		Introduction			assessment.	
	Colour Hat	An overview of				
	Hackers	phishing attacks,				
		explaining what they				
	This topic	are and why they are				
	explores the					
	different types	a threat to online		1		
	of hackers,	security.		1		
	categorized by			1		
	"hat" colours:					
				1		
	white hat			1		
	(ethical			1		
	hackers),			1		
	black hat					
	(illegal					
	hackers), and			1		
	grey hat					
	(hackers who					
	•			1		
	may act					
	ethically or			1		
	unethically).			1		
				1		

Year 8	Social Engineering Learn how attackers manipulate people to gain unauthorized access to information or systems. Public Network Attack Understand the risks of using public Wi-Fi and how attackers can exploit these networks. Embedded Systems Explore specialized computer systems built into devices like cars, appliances, and gadgets. Input, Process, Output Study the basic cycle of how computers take input, process data, and produce output.	Test	Computer Components – Software Learn about different types of software and their roles within a computer system. Binary Basics Understand the binary number system and why computers use it. Binary to Decimal Learn how to convert binary numbers into decimal numbers.	Test	Learning the Basics of HTML and Projects This topic teaches students the fundamentals of HTML (Hypertext Markup Language) for creating web pages. Students will learn about basic HTML tags, structure, and elements like headings, paragraphs, links, and images. They will apply this knowledge to create their own simple web projects.	Learning the Basics of HTML and Projects This topic teaches students the fundamentals of HTML (Hypertext Markup Language) for creating web pages. Students will learn about basic HTML tags, structure, and elements like headings, paragraphs, links, and images. They will apply this knowledge to create their own simple web projects.	Practical	Binary to Hex Learn how to convert binary numbers into hexadecimal format, which is a compact way to represent binary data. Images Explore how digital images are created, stored, and displayed using pixels and colour codes. Networking Understand how computers connect and communicate over networks, including basic concepts and types of networks.	Flowcharts Learn how to use flowcharts to visually represent the steps and decisions in a process or algorithm. Ethical, Cultural, and Environmental Issues with AI Explore the challenges AI poses to society, including privacy concerns, cultural impacts, and environmental effects. Technology Evolution Understand how technology has developed over time and how advances shape our world today.

		Logic gates	Python	Python	1		
		Logic gales	1 yilloli	1 yilloli		_	_
	Secondary	When learning	This topic	This topic		Types of	Law
	Storage – How	about logic	introduces	introduces		Networks	Explore key
	They Work	_				Learn about	laws related to
	Learn about	gates, students	students to	students to		different	computing,
	different types	will learn about	Python, a	Python, a		network types,	including data
	of secondary	the basic	beginner-	beginner-		such as LAN,	protection,
	storage	building blocks	friendly	friendly		WAN, and	intellectual
	devices (like	of digital	programming	programming		PAN, and how	property, and
	hard drives,	circuits and	language.	language.		they connect	cybercrime
	SSDs, USB	computer	Students will	Students will		devices over	regulations.
	drives) and	systems. Logic	learn basic	learn basic		various	regulations.
	1	gates are the	concepts such	concepts such		distances.	
	how they store	fundamental	as variables,	as variables,		distances.	History of the
	data long-	elements of	data types,	data types,			Computer
	term.	digital circuits,	loops, and	loops, and		Networking	Learn about
		used to process	conditionals,	conditionals,		Topologies	the major
	Secondary	and transmit	and how to	and how to		Explore	milestones and
	Storage –	binary signals.	write simple	write simple		common	pioneers in
	Search Project	Sindly signois.	programmes.	programmes.		network	computer
	(Cloud	Binary and	programmes.	programmes.		structures like	development
	Storage)	hexadecimal				star, bus, and	from early
	Investigate	nexadecinidi				ring, and how	machines to
	cloud storage	Students will				devices are	modern
	services, how	learn how to				connected in	technology.
							lechnology.
	they store data	convert				each layout.	
Year	online, and	decimal					EOY
9	their	numbers (base				Networking	
′	advantages	10) to binary				Threats	
	and	(base 2) and				Understand	
	challenges.	hexadecimal				the risks	
		(base 16)				networks face,	
	Artificial	representations.				including	
	Intelligence	They will learn				hacking,	
	(AI)	the concepts				malware, and	
	Understand	and algorithms				denial-of-	
	the basics of	used to perform				service	
	Al, how	these				attacks.	
	machines	conversions, as				anacks.	
	simulate	well as the	1			N. 1 1 .	
	human	advantages	1			Networking	
	intelligence,	and	1			Hardware	
	· · ·	disadvantages				Discover the	
	and its	of different	1			devices that	
	applications.	number	1			make	
		systems.	1			networks work,	
		2,5101101	1			such as	
		Networking				routers,	
						switches, hubs,	
		students will				and access	
		learn about the	1			points.	
		technology that				-	
		enables					
		computers and					
		other devices to	1				
		communicate	1				
		Communicate	<u> </u>				

				1		1	1	
			with each other over a network.					
	Students will		When learning about		Python	Defensive		When learning about secondary
	gain a		data representation		programming	design and		storage and utility software,
	fundamental		with images and		and ethical,	the		students will gain an
	understanding		sound, and compression,		legal, cultural, and	architecture of the CPU,		understanding of the different
	of digital logic and computer		students will learn		environmental	students will		types of storage used in computing systems. They will
	systems. They		about the different		impacts,	gain a deeper		learn about secondary storage
	will learn about		methods and		students will	understanding		devices, including hard disk
	the basic		technologies used to		gain a	of computer		drives, solid-state drives, and
	building blocks		store, process, and		foundation in	systems and		cloud storage, and how they are
	of digital logic, such as AND,		transmit multimedia data such as images,		programming concepts and	how they are designed to		used to store and retrieve data.
	OR, and NOT		audio, and video.		practices.	operate		
	gates, and how				They will learn	securely. They		
	they are used		They will learn about		how to write	will learn		Additionally, students will learn
	to perform		different image and		code in	about		about utility software, including tools and applications used to
	logical operations.		audio file formats, such as JPEG, PNG,		Python, a widely used	defensive design		manage, maintain, and optimize
	operations.		and MP3, and how		programming	techniques		computer systems. This includes
	Students will		they are used to		language, and	and strategies,		understanding the different types
	also learn	-	represent images	8	understand	including input	m	of utility software, such as disk defragmenters, backup software,
١.,	about decimal to binary and	Ę	and sound in a digital format.	Ę	the basic syntax and	validation, error handling,	¥	and anti-virus software, and how
	hexadecimal	æ	algilai loimai.	e E	structure of a	and security	Je	they can be used to increase
1	conversions,	ISS		SS	program. They	testing, to	l ss	efficiency, ensure data security,
	which are	Assessment 1		Assessment 2	will also learn	create	Assessment 3	and improve overall system
	important for understanding	₹		∢	about	software that is	As	performance. By the end of the unit, students will have a solid
	how computers				variables, data types,	resilient against		understanding of secondary
	store and				control	security		storage and utility software, and
	process data.				structures,	threats.		how they are used to manage
	Additionally,				functions, and			and maintain computer systems.
	students will				more.			
	learn about							
	computational							
	thinking, which involves							
	breaking down							
	complex							
	problems into							
	smaller, more							
	manageable steps and using							
	algorithms and							
	logic to find							
	solutions.							
	1					I		1

	1					T 5
					When learning	Revision in
	Students will gain an in-depth understanding of the central processing unit		Students will understand of the		about different	preparation for
	(CPU) and how it functions within a computer system. They will learn about		different types of network		searching and	end of year
	the different components of the CPU, including the control unit, arithmetic		configurations and how they are		sorting	exams.
	logic unit, and cache, and how they work together to execute instructions		used to connect devices. They		algorithms,	
	and perform tasks.		will learn about different network		students will	
	una penoim iasks.		topologies, including bus, star,		gain an	
					understanding	
			and mesh networks, and the		of various	
	Additionally, students will learn about CPU performance and how it can be		advantages and disadvantages of each.		methods used	
	measured and optimized. This includes understanding the different factors		or each.		to search and	
	that influence CPU performance, such as clock speed, number of cores,		Additionally, students will learn		sort data. They	
	and memory, and how they can be used to improve the overall		about the various security threats		will learn	
	performance of a computer system. By the end of the unit, students will		that can impact computer		about different	
	have a solid understanding of the architecture of the CPU and CPU		systems, including viruses,		types of	
	performance, and how they impact the performance and efficiency of a		malware, and hacking, and how		searching	
	computer system.		_		algorithms,	
	7,000		to protect against these threats.		such as linear	
			This includes understanding the different types of security		search, binary	
			measures, such as firewalls,		search, and	
			antivirus software, and		hash table,	
			encryption, and how they can		and how they	
			be used to secure computer		can be used	
			•		to find specific	
		8	systems and networks. By the	m	data within a	
		Ë	end of the unit, students will have	<u></u>	large dataset.	
Year		Mock Exam 2	a solid understanding of	Mock Exam 3		
11		<u> </u>	networking topology and the	Ä		
""		×	various security threats to computer systems, and how to	×		
		8	protect against them.	8	Additionally,	
		Š	profect against mem.	Š	students will	
					learn about	
					different	
					sorting	
					algorithms,	
					including	
					bubble sort,	
					insertion sort,	
					and quick sort,	
					and how they	
					can be used	
					to efficiently	
					sort data. This	
					includes	
					understanding	
					the different	
					trade-offs,	
					such as time	
					and space	
					complexity, of	
					each	
					algorithm and	
					when to use	
					each one	
					based on the	
					specific	
	<u> </u>				- specific	<u> </u>

					requirements of a given problem.
Year 12	System Architecture Understanding the internal structure of the CPU, including the fetch-decode-execute cycle, registers, and how the CPU processes instructions. Memory and Storage Study different types of memory (RAM, ROM, cache) and storage devices, their characteristics, and their roles in computing systems. Data Representation Learn how data is represented in binary, including number systems (binary, hexadecimal), character encoding (ASCII, Unicode), and data types. Networks Explore network types, topologies, protocols, and the hardware involved in data transmission and communication.	Mock Exam 2	System Security Understand threats to computer systems, methods of protection, and ethical, legal, and environmental impacts of computing. Software Study different types of software, including operating systems, utility programs, and application software. System Performance Investigate factors affecting system performance and how to improve efficiency. Legal, Ethical, and Environmental Issues Examine the laws, ethics, and environmental considerations relevant to computing technologies.	Mock Exam 3	Algorithms Study how to design, analyze, and evaluate algorithms for solving problems efficiently, including searching and sorting algorithms. Programming Techniques Learn programming concepts such as iteration, selection, recursion, and data structures like arrays and records. Algorithm Design and Problem Solving Develop skills in designing algorithms using pseudocode and flowcharts to solve complex problems. Data Structures Understand different data structures including lists, stacks, queues, and trees, and their applications. Practical Programming Project Complete a substantial programming project to demonstrate practical skills in designing, implementing, testing, and evaluating a software solution.