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BARLBY HIGH SCHOOL

Curriculum Overview for Computer Science KS3

The table below details the skills and knowledge students will be covering each half term in Year 7 in this subject area.

	HT1	HT2	HT3	HT4	HT5	HT6
Knowledge and skills covered this year	**Unit 1 – Using computers effectively, safely and responsibly** This is an introductory unit in which students will learn about • Expectations and routines • School network and Google Classroom • File management • Social media • Keeping data safe	**Unit 1 – Using computers effectively, safely and responsibly cont.** • Using Email • Searching the web **Unit 2 – Spreadsheet modelling** This unit introduces students to using tools to model scenarios using data • Introduction to spreadsheets • Computer models • Creating a financial model	**Unit 2 – Spreadsheet modelling cont.** • Conditional formatting and validation • COUNTIF function • Charts and Macros	**Unit 3 – Scratch** This unit introduces students to programming using a 'Build your own Blocks' approach • Sequencing • Variables • Selection • Operators	**Unit 3 – Scratch cont.** • Count controlled iteration **Unit 4 – Graphics** This unit introduces students creating and using different types of graphics • Vector graphics • Bitmap graphics • Conveying meaning	**Unit 4 – Graphics cont.** • Enhancements and effects • Text

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The table below details the skills and knowledge students will be covering each half term in Year 8 in this subject area.

	HT1	HT2	HT3	HT4	HT5	HT6
Knowledge and skills covered this year	**Unit 1 – Computer crime and Cyber security** This unit builds on the e-safety aspects in Year 7 and looks at how Cyber security aspects are used to tackle computer crime • Computer misuse • Protecting personal data • Passwords and Email scams • Copyright • Health and safety	**Unit 2 – HTML and Website development** This unit introduces students to creating web pages using HTML • HTML • CSS (Cascading Style Sheets) • Design • Development • Web forms	**Unit 3 – Computational thinking and logic** This units introduces students to the power of problem solving and the different methods Computer Scientists use to tackle problems • Logical thinking • Logic gates • Algorithmic thinking	**Unit 3 – Computational thinking and logic cont.** • Algorithmic thinking • Abstraction • Decomposition	**Unit 4 – Introduction to Python** This unit builds on the Scratch programming in Year 7 and introduces students to a text based programming language giving plenty of opportunity to develop their practical programming skills within each topic • Strings and variables • Data types and arithmetic • Selection	**Unit 4 – Introduction to Python cont.** • Writing algorithms • While loops • Searching • Practical programming throughout the unit

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The table below details the skills and knowledge students will be covering each half term in Year 9 in this subject area.

	HT1	HT2	HT3	HT4	HT5	HT6
Knowledge and skills covered this year	**Unit 1 – Understanding computers** This unit gives students an insight into how computers work ● Elements of a computer ● The CPU ● Binary numbers ● Binary addition and ASCII ● Storage devices ● Convergence and new technologies	**Unit 2 – Python: Next steps** This unit builds upon the Python work completed in Year 8 ● The basics ● Loops ● Lists ● Procedures ● Functions ● Practical programming throughout the unit	**Unit 2 – Python: Next steps cont.** ● Procedures ● Functions ● Practical programming throughout the unit	**Unit 3 – Database development** This unit introduces the concept of databases ● Introduction to databases ● Queries ● Planning and creating a database table ● Input forms ● Creating a report	**Unit 4 – AI and Machine Learning** This unit allows students to consider the ethical, legal, social and cultural impact of Computer Science both now and in the future. ● What is AI ● Machine Learning ● Ethics of AI ● Image recognition	**Unit 4 – AI and Machine Learning cont.** ● Turing tests and chatbots ● Rate my review

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Curriculum Overview for Computer Science KS4

The table below details the skills and knowledge students will be covering each half term in Year 10 in this subject area.

	HT1	HT2	HT3	HT4	HT5	HT6
AQA GCSE Computer Science (8525) Knowledge and skills which will be covered this year	**Paper 1** **Unit 1 –Fundamentals of Algorithms** • Algorithms, abstraction and decomposition • Planning algorithms using flowcharts • Planning algorithms using pseudocode • Searching algorithms • Sorting algorithms **Paper 1** **Unit 2A – Programming basics cont.** • Data types and operations	**Paper 1** **Unit 2A – Programming basics cont.** • Sequence • Selection • Iteration • Arrays and Records	**Paper 2** **Unit 6 – Cyber security** • Cyber security threats • Social engineering • Malicious code • Prevention and detection	**Paper 1** **Unit 2B – Programming techniques** • Procedures & Functions • Validation and Authentication • Determining the purpose of algorithms	**Paper 1** **Unit 2B – Programming techniques cont.** • Errors and testing **Paper 2** **Unit 4 – Computer systems** • Boolean logic • Application and system software • Languages and translators	**Paper 2** **Unit 4 – Computer systems cont** • Systems architecture • The CPU and Fetch Execute cycle • Memory

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The table below details the skills and knowledge students will be covering each half term in Year 11 in this subject area.

	HT1	HT2	HT3	HT4	HT5	
AQA GCSE Computer Science (8525) Knowledge and skills which will be covered this year	**Paper 2** **Unit 8 – Impacts of technology on society** ● Ethical impacts ● Environmental issues ● Legislation and Privacy **Paper 2** **Unit 3 – Data representation** ● Units and Binary numbers ● Binary arithmetic and Hexadecimal ● ASCII and Unicode ● Images ● Sound	**Paper 2** **Unit 3 – Data representation cont.** ● Compression **Paper 2** **Unit 5 – Fundamentals of computer networks** ● Wired and wireless networks ● Network topologies ● Network security ● Protocols and layers **Mock exams** **Paper 1 and 2** Revision and preparation for	**Paper 2** **Unit 7 – Relational databases and SQL** ● Concept of a database ● Relational database concept ● SQL **Paper 1** **Computational thinking and programming skills** ● Review of units 1, 2A and 2B ● Exam revision	**Paper 2** **Computing concepts** ● Review of units 3 through to 8 ● Exam revision **Mock exams** **Paper 1 and 2** Revision and preparation for mock exams	**Paper 1** **Computational thinking and programming skills** Exam preparation and revision **Exam date:** 12th May 2025 **Paper 2** **Computing concepts** Exam preparation and revision **Exam date:** 20th May 2025	

		mock exams				