Birchwood High School **KS4 Computer Science Curriculum/Assessment Map** *your dreams, your future, our challenge*

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
9	**P1 Topic:** Intro into Computer systems **Knowledge and skills** • Intro – how does a computer work? • Function of the CPU (Von Neumann architecture) • Embedded systems. • RAM, ROM and cache • Fetch execute cycle using the CPU and RAM. **P2 Topic:** Computational thinking **Knowledge and skills** • Computational thinking • Intro into Algorithms • Intro into flow charts	**P1 Topic:** Storage **Knowledge and skills** • Secondary storage devices • Units of data • Binary to denary conversions and vice versa • Character sets, ASCII and Unicode. • The use of compression **P2 Topic:** Python intro **Knowledge and skills** • The Python interface. • Annotating code effectively • Print statement • Data types and casting • Variables and constants • Naming conventions • Inputs • Intro substrings	**P1 Topic:** Networks **Knowledge and skills** • LAN and WAN • Components that make up a networks • The internet • Identifying the Star and mesh topologies • Modes of connection: Wired and wireless. • Encryption **P2 Topic:** Selection in Python **Knowledge and skills** • If statements • Importance of indentation. • The common Boolean operators AND, OR and NOT • The common arithmetic operators • Random number generator	**P1 Topic:** Network attacks **Knowledge and skills** • Forms of network attacks • Preventing network attacks • What is an operating system? • What are the different types of operating system? • Exploring the windows operating system? **P2 Topic:** Loops in Python **Knowledge and skills** • For loops • While loops • Basic file handling techniques.	**P1 Topic:** Ethics and the law **Knowledge and skills** • Introduction into Ethics • Impact of IT on different industries. • Laws that surround ICT **P2 Topic:** **Knowledge and skills:** File handling and lists • File handling techniques. • Intro into arrays. • Substrings • Building complex programs.	**P1 Topic:** Consolidating the skills and knowledge **Knowledge and skills** • Mastering the year 9 topic areas • Addressing the gaps in the knowledge. • Revision skills for great progress **P2 Topic:** Programming project and system development lifecycle. **Knowledge and skills** • Mini Python project, incorporating the following skills • Print, inputs, if statements, loops, arrays and file handling.

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10	**P1 Topic:** Architecture of the CPU and primary storage **Knowledge and skills** • The fetch-execute cycle • Functions of the components and registers of the Von Neumann architecture • What affects the performance of the CPU? • Primary storage **P2 Topic:** Functions and gates **Knowledge and skills** • Recap of year 9 skills • Functions and procedures • Knowing when to use a function and procedure • Nesting	**P1 Topic:** Secondary storage and Data **Knowledge and skills** • Common types of secondary storage • Characteristics of secondary storage devices • Data capacity and calculation of data capacity requirements • Hex conversions • Binary additions • Binary shifts. **P2 Topic:** **Knowledge and skills** • Built in libraries within Python • If statements and case statements.	**P1 Topic:** Binary and Networks **Knowledge and skills** • Binary in images • Binary in sounds • Types of compression, Lossy and lossless • P 2 P vs client server networks. • Factors affecting network performance. • Understanding the star and mesh topologies. • The internet. • IP addressing and MAC addressing. **P2 Topic:** Pseudocode **Knowledge and skills**	**P1 Topic:** Networks and software **Knowledge and skills** • Standards and layers • TCP/IP protocols. • Forms of network attacks • Preventing network attacks • Functions of the OS • Utility software • Ethics and the laws **P2 Topic:** Defensive design **Knowledge and skills** • Intro into defensive design • Authentication • Validation and verification methods • Types of testing	**P1 Topic:** Getting ready for end of year exam **Knowledge and skills** • Creating revision resources • Understanding the requirements of the exam • Revisiting topic areas **P2 Topic:** Programming project **Knowledge and skills** • Creating a programming solution for a given scenario released by the exam board. • Applying all the python skills to this scenario using the SDLC.	**P1 Topic:** Getting ready for end of year exam **Knowledge and skills** • Creating revision resources • Understanding the requirements of the exam • Revisiting topic areas **P2 Topic:** Programming project **Knowledge and skills** • Creating a programming solution for a given scenario released by the exam board. • Applying all the python skills to this scenario using the SDLC.

	• Binary logic AND, OR, NOT gates	• For and while loops • 2d Arrays	• How to write in pseudocode (OCR) • Trace tables. • SQL • Searching records with SQL	• Test data.		

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11	**P1 Topic:** Revisited topics 1 • The fetch-execute cycle • Functions of the components and registers of the Von Neumann architecture • Cache memory **Knowledge and skills** **P2 Topic:** Searches and sorts **Knowledge and skills** • Applying pseudocode to the exam questions. • Sorts and searches • Writing code for the sorts and searches. • High/Low level languages • IDE's	**P1 Topic:** Revisited topics 2 **Knowledge and skills** • Data capacity and calculation of data capacity requirements • Hex conversions • Binary additions • Binary shifts. • Standards and layers • TCP/IP protocols. **P2 Topic: Exam questions.** **Knowledge and skills** • Applying pseudocode to the exam questions. • Revision for paper 2 Year 11 mocks will be completed in this term.	**Revision stage 1** All knowledge and skills will be completed by this stage. Students will complete personalised revision addressing their weaker topic areas. This is to ensure they are completely ready for their GCSE examinations.	**Revision stage 2** All knowledge and skills will be completed by this stage. Students will complete personalised revision addressing their weaker topic areas. This is to ensure they are completely ready for their GCSE examinations.	**GCSE exams** External GCSE exams	**GCSE exams** External GCSE exams