GCSE Curriculum Overview 2021 -2022

	Module 1	Module 2	Module 3
Year 1	**J277 Unit 1: Systems architecture** **Specification J277 from 2020 - Paper 1**	**J277 Unit 2: Data representation** **Specification J277 from 2020 - Paper 1**	**J277 Unit 3: Networks, connections and protocols** **Specification J277 - Paper 1**
	The unit begins by looking at the various components of the CPU used in the Von Neumann architecture. Subsequent lessons build on the fundamentals covered at KS3 in our Understanding Computers unit, concentrating on RAM, ROM, cache, registers and the need for virtual memory. The unit concludes by examining the need for secondary storage devices and their practical advantages in given applications.	Each comprehensive lesson contains a worksheet to be done in class to consolidate students' knowledge and understanding, as well as a homework sheet to give them plenty of practice in answering exam-style questions. The conversion of integers from denary to binary is covered in the first lessons, together with simple binary addition, overflow and shifts. In subsequent lessons, the use of hexadecimal numbers and the binary representation of characters is described. Representation of images and sound and compression techniques are covered in three separate lessons. In the final lesson, students sit an assessment test comprising questions similar to those found on the OCR exam paper.	It is a theoretical unit covering Section 1.3 of the latest OCR GCSE J277 Computing specification. The unit begins by explaining the Internet and IP addressing, with practical exercises to help students understand the role of packet switching and DNS services. The lessons move on to look at star and mesh LAN network topologies and Ethernet. Wireless networking and encryption are covered in subsequent lessons. Client-server networks and hosting are addressed with a final lesson describing common protocols and the concept of layers. At the end of the unit, students sit an assessment test comprising questions similar to those found on the OCR exam paper.
	Module 4	**Module 5**	**Module 6**

	J277 Unit 4: Network security and systems software **Specification J277 - Paper 1**	**J277 Unit 5: Impacts of digital technology** **Specification J277 from 2020 - Paper 1**	**J277 Unit 5: Impacts of digital technology** **Specification J277 from 2020 - Paper 1**
	It is a theoretical unit covering Sections 1.4 and 1.5 of the latest OCR GCSE J277 Computing specification. This unit begins by looking at the threats and vulnerabilities of computer systems and programs, including social engineering and the concept of SQL injection. Encryption and penetration testing are covered as examples of various methods of preventing vulnerabilities. The unit continues to focus on operating systems software, their function and typical utility software programs including defragmentation and compression programs.	It is a theoretical unit covering the latest OCR GCSE J277 Computer Science specification section 1.6. It begins by describing key examples of ethical, cultural and environmental considerations in relation to selected Computer Science technologies. The unit continues to focus on licencing and specific legislation related to Computer Science.	It is a theoretical unit covering the latest OCR GCSE J277 Computer Science specification section 1.6. It begins by describing key examples of ethical, cultural and environmental considerations in relation to selected Computer Science technologies. The unit continues to focus on licencing and specific legislation related to Computer Science.
	Module 1	**Module 2**	**Module 3**
Year 2	**J277 Unit 6: Algorithms**	**J277 Unit 7: Programming**	**J277 Unit 8: Logic and languages**

	Specification J277 from 2020 - Paper 2	**Specification J277 from 2020 - Paper 2**	**Specification J277 from 2020 - Paper 2**
	This unit begins by looking at computational thinking, including abstraction and decomposition. Two lessons are given to interpreting and comparing relevant searching and sorting algorithms including the merge and insertion sorts. These are written in the new OCR Reference Language. Practical experience of writing, tracing and modelling algorithms using pseudocode and flowcharts is then provided. Students are also be given ample practical experience of correcting and completing algorithms (including debugging and testing) in worksheets and homework tasks.	This programming unit covers the theoretical aspects of Section 2.2 of the latest J277 OCR GCSE Computer Science specification, covering all the knowledge and skills that students will need to tackle exam questions in Paper 2. The basic programming constructs are covered as well as string manipulation and file handling. Iteration and arrays are subsequently covered, before examining the use of procedures and functions to structure code. Finally, records and the use of SQL to search for data are covered. The unit is independent of any particular programming language but basic knowledge and practical experience of Python programming in a language is assumed.	This unit begins with a lesson on Boolean logic diagrams and truth tables. Testing and error handling is covered using practical examples, including the use of the common tools and functions of an IDE. The unit concludes by looking at programming language classifications including translators and low-level languages. A test is provided with GCSE style questions to assess understanding across all lessons in the unit.
	Module 4 **Component 01, 02, ad 03**	**Module 5** **Component 01, 02, ad 03**	**Module 6**
	Exam revision and python programming.	GCSE Computer Science - paper 1 exams	Completed

		GCSE Computer Science - paper 2 exams	