Department	DIGITAL STUDIES (COMPUTER SCIENCE)
Key Stage	KS4
Course Level	GCSE
Exam Board	OCR

Unit Title	Why This Is Important and Why Is It Taught at This Point?
Practical programming	This unit will give students the opportunity to undertake programming tasks during their course of study. This will allow them to develop their skills to design, write, test, and refine programs using Python programming language.

Dates Delivered	**Unit Title**	**End Points**	**Substantive Knowledge** **What will they learn about in this topic?**	**Disciplinary Knowledge** **What subject concepts will be developed through this topic?**	**Assessment Method**	**Key Course Guides & Reading**
Year 9 Autumn Spring Summer Year 10 Autumn Spring Summer Year 11 Summer 1	Practical	Understand how to analyse problems in computational terms through practical experience of solving such problems, including designing, writing and debugging programs Understand how to think creatively, innovatively, analytically, logically and critically	Programming using sequence Programming using selection Programming using iteration Programming using subroutines Programming using strings and lists Programming using dictionaries and data files	Use variables and input in Python. Use randomisation in programs. Work with arithmetic and logical expressions. Use while and for loop in Python. Functions and procedures as part of the structured approach to programming. Perform string handling operations. Manipulate a list. Use a record and a dictionary data structure. Access and modify external data files.	Practical Programming skills will be assessed in Component 2 of the qualification, in Section B. Section B is worth 30 marks.	https://teachers.thenational.academy/subjects/computing/key-stages/key-stage-4 https://ocr.org.uk/qualifications/gcse/computer-science-j277-from-2020/planning-and-teaching/ https://www.bbc.co.uk/bitesize/examspecs/zmtchbk

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Unit Title	Why This Is Important and Why Is It Taught at This Point?
J277/01: Computer systems	Students are introduced to the central processing unit (CPU), computer memory and storage, data representation, wired and wireless networks, network topologies, system security and system software. It also looks at ethical, legal, cultural and environmental concerns associated with computer science.

Dates Delivered	**Unit Title**	**End Points**	**Substantive Knowledge** **What will they learn about in this topic?**	**Disciplinary Knowledge** **What subject concepts will be developed through this topic?**	**Assessment Method**	**Key Course Guides & Reading**
Year 9 Autumn Spring Summer Year 10 Autumn Spring Summer Year 11 Spring	J277/01	Understand the components that make up digital systems, and how they communicate with one another and with other systems Understand how to apply mathematical skills relevant to Computer Science. Understand the impacts of digital technology to the individual and to wider society	Systems architecture Memory and storage Computer networks, connections and Protocols Network security Systems software Ethical, legal, cultural and environmental impacts of digital technology	Architecture of the CPU/ CPU Performance/ Embedded systems Primary storage (Memory)/ Secondary storage/ Units/ Data storage/ Compression Networks and topologies/ Wired and wireless networks/ protocols and layers Threats to computer systems and networks/ Identifying and preventing vulnerabilities Operating systems/ Utility software Ethical, legal, cultural and environmental impact	Written paper: 1 hour and 30 minutes 50% of total GCSE 80 marks This paper consists of multiple-choice questions, short response questions and extended response questions.	GCSE OCR Computer Science for Grade 9-1 Course https://teachers.thenational.academy/subjects/computing/key-stages/key-stage-4 https://ocr.org.uk/qualifications/gcse/computer-science-j277-from-2020/planning-and-teaching/ https://www.bbc.co.uk/bitesize/examspecs/zmtchbk

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Unit Title	Why This Is Important and Why Is It Taught at This Point?
J277/02: Computational thinking, algorithms and programming	Students apply knowledge and understanding gained in J277/01 to develop skills and understanding in computational thinking: algorithms, programming techniques, producing robust programs, computational logic and translators.

Dates Delivered	**Unit Title**	**End Points**	**Substantive Knowledge** **What will they learn about in this topic?**	**Disciplinary Knowledge** **What subject concepts will be developed through this topic?**	**Assessment Method**	**Key Course Guides & Reading**
Year 10 Autumn Spring Summer Year 11 Autumn Spring Summer 1	J277/02	Understand and apply the fundamental principles and concepts of Computer Science, including abstraction, decomposition, logic, algorithms, and data representation	Algorithms Programming fundamentals Producing robust programs Boolean logic Programming languages and Integrated development Environments	Computational thinking/ Designing, creating and refining algorithms/ Searching and sorting algorithms Programming fundamentals/ Data types/ Additional programming techniques Defensive design/ Testing Boolean logic Languages, The Integrated Development Environment (IDE)	Written paper: 1 hr & 30 mins 50% of total GCSE 80 marks This paper has two sections: Section A is worth 50 marks, and Section B is worth 30 marks. Students must answer both sections.	GCSE OCR Computer Science for Grade 9-1 Course https://teachers.thenational.academy/subjects/computing/key-stages/key-stage-4 https://ocr.org.uk/qualifications/gcse/computer-science-j277-from-2020/planning-and-teaching/ https://www.bbc.co.uk/bitesize/examspecs/zmtchbk