



SUBJECT: Curriculum Overview

Year 11

Half Term	Topic studied	What will I learn?	How will I be assessed?
Year 11 Autumn 1	Computational thinking Designing algorithms Programming	Computational thinking - Abstraction - Decomposition - Algorithmic thinking Designing, creating and refining algorithms - Identifying the inputs, processes and outputs for a problem - Creating, interpreting, correcting, completing and refining algorithms - Pseudocode and flowcharts - Reference language / high-level programming language - Identifying common errors and using trace tables Programming (Python) – ongoing - Implementing and testing designed algorithms	Students are required to flip between Theory and Programming. One lesson will be on Theory, with the next lesson on Programming. After each unit is complete, pupils will be tested and a level awarded. Students will also receive a programming test twice per term. A level is awarded.
Year 11 Autumn 2	Standard searching and sorting algorithms Programming fundamentals (theory) Programming	Standard algorithms - Linear search and binary search - Bubble sort, merge sort and insertion sort Programming fundamentals - Using records to store data - Opening, reading, writing to and closing files - Using SQL to search for and sort data - Arrays (one- and two-dimensional) - Sub programs (functions and procedures) - Random number generation Programming (Python) – ongoing - Applying data structures and file handling in working code	Students are required to flip between Theory and Programming. One lesson will be on Theory, with the next lesson on Programming. After each unit is complete, pupils will be tested and a level awarded. Students will also receive a programming test twice per term. A level is awarded. (Mock Test)
Year 11 Spring 1	Producing robust programs: defensive design Testing Programming	Defensive design - Anticipating misuse - Authentication - Input validation - Maintainability - Naming conventions, indentation and commenting (housekeeping styles used by software houses) Testing - Types of testing (iterative and final / terminal) - Identifying types of errors (syntax and logic) - Selecting suitable test data (normal, boundary, invalid and erroneous) Programming (Python) – ongoing - Writing robust, fully validated programs	Students are required to flip between Theory and Programming. One lesson will be on Theory, with the next lesson on Programming. After each unit is complete, pupils will be tested and a level awarded. Students will also receive a programming test twice per term. A level is awarded.
Year 11 Spring 2	Boolean logic Programming languages and translators Programming	Boolean logic - Simple logic diagrams using the operators AND, OR and NOT - Truth tables	Students are required to flip between Theory and Programming. One lesson will be on Theory, with the next lesson on Programming.

Half Term	Topic studied	What will I learn?	How will I be assessed?
		- Combining Boolean operators using AND, OR and NOT (up to three inputs) - Applying logical operators in truth tables to solve problems Programming languages and translators - Characteristics and purpose of high-level and low-level languages - The purpose of translators - Characteristics of compilers and interpreters Programming (Python) - ongoing - Exam-style programming practice	After each unit is complete, pupils will be tested and a level awarded. Students will also receive a programming test twice per term. A level is awarded. (Mock Test)
Year 11 Summer 1	The Integrated Development Environment (IDE) Revision Programming	The IDE - Editors - Error diagnostics - Run-time environment - Translators and tools that support development Revision (course concluded) - Revisiting past papers - Exemplar answers - Programming questions - Revision techniques - Covering topics where pupils have struggled	Students are required to flip between Theory and Programming. One lesson will be on Theory, with the next lesson on Programming. After each unit is complete, pupils will be tested and a level awarded. Students will also receive a programming test twice per term. A level is awarded. Students would have covered all past papers by this stage
Year 11 Summer 2	Revision and GCSE examinations	OCR J277 examinations - Final revision and exam technique - Paper 1 (J277/01) Computer systems - Paper 2 (J277/02) Computational thinking, algorithms and programming	Externally assessed by two written examinations. J277/01 Computer systems – 1 hour 30 minutes, 50% of the GCSE. J277/02 Computational thinking, algorithms and programming – 1 hour 30 minutes, 50% of the GCSE.