



Entry Requirements: Grade 5 or above in Computer Science and Grade 6 in Mathematics

Candidates will study various Computer Science topics ranging from theoretical mathematical skills through to advanced programming. The course is 80% externally assessed through two examinations, with the last 20% being covered by a course work piece that is marked internally and externally moderated.

Our A Level Computer Science qualification helps students understand the core academic principles of computer science. Classroom learning is transferred into creating real-world systems through the creation of an independent programming project. Our A Level will develop the student's technical understanding and their ability to analyse and solve problems using computational thinking in order to take them to the next level on their Computer Science career led pathway.

Year 12

- Data Representation, sign and magnitude, twos complement, negative float point binary conversion, hexadecimal, data types, data structures, databases, stacks and queues, Compression, encryption and hashing.
- Boolean Algebra- logic gate circuits, truth tables, Karnaugh maps, simplifying Boolean algebraic expressions.
- Structure and function of the processor, types of processor, Input, output and storage.
- Operating Systems software, application generation.
- Software Development, types of programming language, programming techniques.
- Networks, web technologies, cyber security, computer related legislation, ethical, moral and cultural issues.
- Computational thinking, thinking Abstractly, thinking ahead, thinking procedurally, thinking concurrently.
- Data Structures and Algorithms, Advanced Algorithms and data representation - A* algorithm, Dijkstra's algorithm.
- Data representation, binary trees, reverse polish notation, sign and magnitude, twos complement.
- Boolean Algebra- Flip Flop circuits, full adders, karnaugh maps, simplifying Boolean algebraic expressions.



Year 13

- Programming project- Software Development, types of programming language, programming techniques, Computational methods.
- Revisiting with Diagnosis, Therapy, Retes.
- Data Representation, sign and magnitude, twos compliment, negative float point binary conversion, hexadecimal, data types, data structures, databases, stacks and queues, Compression, encryption and hashing.
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