



# THE ARNEWOOD SCHOOL

## KEY STAGE 5 Computer Science



### Implementation:

This course draws heavily on a lot of the foundation skills learned at GCSE Computer Science. These include skills such as problem solving, logical thinking and programming. The course will also consolidate the students' understanding of computing-related topics such as networking, computer architecture or software.

### Year 12

Half term	Curriculum focus	Landmark assessment
Autumn 1	Fundamentals of programming: data types, arrays, programming constructs, file R/W, records. Problem modelling (hierarchy charts).	Internal examination before half-term.
Autumn 2	Fundamentals of programming: skeleton code and programming extensions from a past examination.	Internal examination – mock exams. On-screen exam.
Spring 1	Systematic approach to problem solving: aspects of software development: analysis, design, implementation, test and evaluation. Theory of computation: FSM (Finite State Machines).	Internal examination before half-term.
Spring 2	Theory of computation: regular expressions, maths for regular expressions (sets), BNF (Backus-Naur Form) and syntax diagrams. Fundamentals of programming: OOP (Object oriented programming).	Internal examination before Easter.
Summer 1	Fundamentals of programming: Recursion and the impact on call stack.	Internal examination before half-term.





	Fundamentals of databases: relationships, E-R diagrams, normal forms, SQL.	
Summer 2	Fundamentals of data structures: abstract data structures such as stacks, queues, trees, graphs.	Internal examination before the end of the academic year.

### Year 13

Half term	Curriculum focus	Landmark assessment
Autumn 1	Fundamentals of algorithms: graph and tree traversal. Searching and sorting algorithms (adding binary search tree to the already known from GCSE). Start of the NEA (programming project).	Internal examination before half-term.
Autumn 2	Analysis of skeleton code used in the final examination: implementation of potential extensions. Fundamentals of data structures: hash tables, dictionaries.	Internal examination – mock exams. On-screen exam.
Spring 1	Theory of computation: models of computation (Turing machines, Halting problem). Fundamentals of algorithms: Dijkstra's shortest path algorithm	Internal examination before half-term.
Spring 2	Fundamentals of functional programming. Revision for final exam: analysis of past exams.	Internal examination before Easter. NEA marked and moderated.
Summer 1	Revision for final exam.	
Summer 2		

