THE ARNEWOOD SCHOOL

KEY STAGE 4 Computer Science

Implementation:

Students taking the computer science course in KS4 would have undertaken programming units through ICT and Technology during KS3. Lessons in KS4 are designed to highlight the similarities of "block" and "textual" programming, as well as build upon tasks and projects completed in past".

Year 9

Half term	Curriculum focus	Landmark assessment
Autumn 1	*Knowledge*: the basics of programming using a textual language (Visual Basic). the basic programming constructs: sequence, selection and iteration. *Skills:* problem solving *Attitudes:* resilience, independent work	Regular formative assessment with a final summative test before half-term.
Autumn 2	*Knowledge*: further development on programming topics such as string handling and alternative implementations of loops (for, while and repeat) *Skills:* problem solving and algorithmic thinking *Attitudes:* resilience, independent work	Regular formative assessment with a final summative test before the end of term.
Spring 1	*Knowledge*: basic networking: topologies, ethernet and protocols data representation: numbers, binary arithmetic and characters *Skills:* logical and analytical thinking *Attitudes:* making links with real-life examples	Regular formative assessment with a school formal examination
Spring 2	*Knowledge*: further networking: packet switching secondary storage data representation: hexadecimal, images and sound *Skills:* logical and analytical thinking *Attitudes:* making links with real-life examples	Regular formative assessment with a final summative test before the end of term.
Summer 1	*Knowledge*: systems architecture: von Neumann vs Harvard processor components ALU computational logic: AND/OR/NOT logics gates *Skills:* logical and analytical thinking	Regular formative assessment with a final summative test before half-term.

	Attitudes: critical-thinking	
Summer 2	*Knowledge*: embedded systems and CPU performance factors algorithms: pseudo-code and flowcharts *Skills:* logical and analytical thinking *Attitudes:* be able to experiment with SQL syntax	Regular formative assessment with a final summative test before the end of term.

Year 10

Half term	**Curriculum focus**	**Landmark assessment**
Autumn 1	*Knowledge*: further programming topics such as file handling and 2-dimensional arrays processor execution cycle: fetch-decode-execute cycle *Skills:* problem solving and analytical skills *Attitudes:* resilience, deep thinking	Regular formative assessment with a final summative test before half-term.
Autumn 2	*Knowledge*: classification of software into their different categories: systems, application… search and sorting algorithms *Skills:* problem solving and algorithmic thinking *Attitudes:* questioning, positive analysis	Regular formative assessment with a final summative test before the end of term.
Spring 1	*Knowledge*: security for systems: threats & prevention programming tasks using previous knowledge & skills *Skills:* logical and analytical thinking *Attitudes:* confidence and creativity	Regular formative assessment with a school formal examination
Spring 2	*Knowledge*: RAM and ROM technologies programming tasks using previous knowledge & skills *Skills:* logical and analytical thinking *Attitudes:* confidence and creativity	Regular formative assessment with a final summative test before the end of term
Summer 1	*Knowledge*: ethical, legal, cultural and environmental aspects of computer science different levels of programming languages and translators main IDE features *Non-exam assessment* *Skills:* critical and analytical thinking *Attitudes:* reflective students and empathy	Regular formative assessment with a final summative test before half-term.
Summer 2	*Knowledge*: further network topics: wired and wireless networks programming tasks using previous knowledge & skills *Non-exam assessment* *Skills:* logical and analytical thinking *Attitudes:* confidence and creativity	Regular formative assessment with a final summative test before the end of term.

Year 11

Half term	Curriculum focus	Landmark assessment
Autumn 1	*Knowledge*: consolidation of topics covered previously application of knowledge against exam papers learning strategies: visual, auditory and kinaesthetic approaches *Non-exam assessment* *Skills:* improved understanding *Attitudes:* positivity and high aspirations	Regular formative assessment using past paper questions.
Autumn 2	*Knowledge*: consolidation of topics covered previously application of knowledge against exam papers *Non-exam assessment* *Skills:* improved understanding *Attitudes:* positivity and high aspirations	Regular formative assessment using past papers and mock exams.
Spring 1	*Knowledge*: consolidation of topics covered previously application of knowledge against exam papers *Skills:* self-assessment for learning *Attitudes:* positivity, resilience and high aspirations	Regular formative assessment using past papers and in particular long questions.
Spring 2	*Knowledge*: consolidation of topics covered previously application of knowledge against exam papers *Skills:* self-assessment for learning analysis of mark schemes *Attitudes:* positivity, resilience and high aspirations	Regular formative assessment using past papers, targeting areas which have been show as weak.
Summer 1	*Knowledge*: consolidation of topics covered previously application of knowledge against exam papers *Skills:* self-assessment for learning analysis of mark schemes *Attitudes:* positivity, resilience and high aspirations	Regular formative assessment using past papers