KING JAMES'S SCHOOL
KNARESBOROUGH

OCR A-Level Computer Science Learning Journey

	Autumn Term	Spring Term	Summer Term
Year 12	Programming techniques: sequence, iteration, branching. Data types, variables, constants & modularity. File handling, strings & input validation. Computer architecture: CPU, FDE cycle, memory & storage. LMC Number systems: binary, hex, floating point, ASCII & Unicode. Systems software: OS types, scheduling, BIOS & device drivers.	Searching & sorting algorithms; Big O notation. Compression (RLE, dictionary), encryption & hashing. Types of programming languages, Translators, Linkers, Loaders and Libraries. Databases: relational design, ER modelling, normalisation to 3NF. SQL, referential integrity, ACID & transaction processing.	Computational Thinking Networks: LAN/WAN, client–server, packet switching. TCP/IP, DNS, protocols and network security. Boolean algebra: logic gates, Karnaugh maps, De Morgan's laws & flip-flops. Object-oriented programming: classes, encapsulation, inheritance, polymorphism.

▼

Autumn Term	Spring Term	Summer Term	
Web development: HTML/CSS, JavaScript, client & server-side validation. Advanced data structures: stacks, queues, linked lists, trees & graphs. Computing legislation: Data Protection, Computer Misuse Acts. Moral & ethical issues: AI, censorship, surveillance, environment. **NEA: analysis, design**	Computational methods Software development: waterfall, agile, spiral and RAD models. Testing strategies: black box, white box, alpha and beta testing. **NEA iterations, post-development testing and evaluation**.	Final revision across all A-Level topics. Exam technique and past paper practice. **NEA project submission (May deadline).**	Year 13