

OCR A-Level Computer Science Learning Journey (Years 12 & 13)

Year 12

Autumn Term

Programming techniques: sequence, iteration, branching.
Data types, variables, constants & modularity.
File handling, strings and input validation.
Computer architecture: CPU, FDE cycle, memory & storage.
Number systems: binary, hex, floating point, ASCII & Unicode.

Spring Term

Searching & sorting algorithms; Big O notation.
Compression (RLE, dictionary), encryption & hashing.
Databases: relational design, ER modelling, normalisation to 3NF.
SQL, referential integrity, ACID & transaction processing.
Systems software: OS types, scheduling, BIOS & device drivers.

Summer Term

Networks: LAN/WAN, client-server, packet switching.
TCP/IP, DNS, protocols and network security.
Computing legislation: Data Protection, Computer Misuse Acts.
Moral & ethical issues: AI, censorship, surveillance, environment.

Autumn Term

Web development: HTML/CSS, JavaScript, client & server-side validation.
Advanced data structures: stacks, queues, linked lists, trees & graphs.
Object-oriented programming: classes, encapsulation, inheritance, polymorphism.
Boolean algebra: logic gates, Karnaugh maps, De Morgan's laws & flip-flops.
NEA: analysis, design and OOP class diagram.

Spring Term

Computational methods: decomposition, abstraction, backtracking, heuristics.
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.

Summer Term

Final revision across all A-Level topics.
Exam technique and past paper practice.
NEA project submission (April/May deadline).

Year 13



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