

A Level Computer Science Y13 PPE Revision Timetable

Student Name:

We will be asking you to revise different topics each week using weekly revision activities via Teams.

Revision Resources

- Smart revise
- StudyHubCS <https://studyhubcs.onrender.com/>
- William Physics Website <https://www.williamsphysics.co.uk/computerscience> (OCR A-Level)

Exam

You will have 2 exam papers (1 hour 30 minutes)

Date	Unit 1	Revised & Tested?
Week 1 – Monday 14th September	Topic 1 Structure and function of the processor • ALU, CU, Registers, Buses, data, address and control and how they relate to assembly language. • FDE Cycle and its effects on the registers. • CPU performance, pipelining and architectures. Types of Processors CISC and RSIC, GPUs and Multicore and Parallel systems. Input, output and Storage Different types of devices, Magnetic, flash and optical storage, RAM and ROM, Virtual Storage	
Week 2	Topic 2 System Software • Operating Systems Types ○ Real time ○ Distributed ○ Embedded ○ Multi-tasking ○ Multi-user ○ Memory Management • Interrupts • Scheduling • BIOS • Device Drivers Virtual Machines. Applications Generation • Application software • Utilities	
Week 3	Topic 4 Number Systems • Binary calculations • sign and magnitude • two's complement • Hexadecimal • Character Sets (ASCII AND UNICODE CHARACTER SETS) • Addition and subtraction of binary	

	- Floating point numbers - Normalising Floating Point	
Week 4	Topic 3 Compression, encryption and hashing - How data is exchanged between different systems - Compression, Encryption and Hashing - Lossy vs Lossless compression. - Run length encoding and dictionary coding for lossless compression. Symmetric and asymmetric encryption Different uses of hashing.	
Week 5	Topic 7 Programming techniques - Variables vs Constants - Programming Constructs (Selection, Sequence, Iteration) - Scope of variables (Local vs Global) - Data types - Modularity (Function vs Procedure) - Passing by value vs passing by reference - Arrays, Tuples and Lists - Files - IDE Tools - Type of errors and suitable test data Programming Standards and maintainability	
Week 6	Topic 6 Elements of computational thinking - Thinking abstractly - Thinking ahead - Thinking procedurally - Thinking logically - Thinking concurrently	
Week 7 Half Term	Topic 8 Algorithms – Searching and Sorting Algorithms Analysis and design of algorithms for a given situation. - Bubble Sort - insertion sort - merge sort - quick sort - Binary search and linear search. Topic 8 Big O - Measures and methods to determine the efficiency of different algorithms, - Big O notation (constant, linear, polynomial, exponential and logarithmic complexity). - Comparison of the complexity of algorithms. - The suitability of different algorithms for a given task and data set, in terms of execution time and space.	
Week 8	Topic 2 Types of Programming Languages - Translators: interpreters, compilers, and assemblers. - Assembly language (including following and writing simple programs with the Little Man Computer instruction set). - Modes of addressing	

	Stages of compilation (lexical analysis, syntax analysis, code generation, and optimisation) Linkers and loaders and use of libraries.	
Week 9	Topic 4 Web Languages HTML, CSS and JavaScript.	
Week 10	Topic 4 Internet - Search engine indexing. - PageRank algorithm. - Server and client-side processing.	
Week 11/13	Topic 2 Data structures - Data Types - Primitive data types, integer, real/floating point, character, string and Boolean. - Arrays (of up to 3 dimensions) - Records - Lists - Tuples. - stack & queue, - linked-lists - Graph (directed and undirected), - Tree, binary search tree, - Hash table	
Week 13	Topic 5 Ethics and Laws Legal, moral, cultural and ethical issues Computing related legislation ☐ The Data Protection Act 1998. ☐ The Computer Misuse Act 1990. ☐ The Copyright Design and Patents Act 1988. ☐ The Regulation of Investigatory Powers Act 2000. Moral and ethical Issues The individual moral, social, ethical and cultural opportunities and risks of digital technology: ☐ Computers in the workforce. ☐ Automated decision making. ☐ Artificial intelligence. ☐ Environmental effects. ☐ Censorship and the Internet. ☐ Monitor behaviour. ☐ Analyse personal information. ☐ Piracy and offensive communications. Layout, colour paradigms and character sets.	
PPE	Paper 1 Computer systems	
PPE	Paper 2 Algorithms and programming	