

Year 13 Computer Science Revision Timetable 2025

OCR A-level Computer Science

We will be asking you to revise different topics each week using weekly revision activities via a Showbie class to be completed as homework and during revision lessons. Class code: **VHNPB**

Resources

- Seneca <https://senecalearning.com/en-GB/revision-notes/a-level/computer-science/ocr>
- Craig n Dave Online Videos <https://student.craigndave.org/h046-h446>
- Isaac Computing <https://isaaccomputerscience.org/>
- Ada Computing <https://adacomputerscience.org/>
- Quizlet <https://quizlet.com/join/6mPgbfnVY>

Exam Dates

A-Level Programming Project 15th May Deadline

Exam Date	Examination Code	Title	Exam Time	Exam Duration
11/06/2025	H446/01	Computer systems - Written Paper	AM	2h 30m
18/06/2025	H446/02	Algorithms and programming - Written Paper	AM	2h 30m

Date	Paper 1	Paper 2	Revision Sessions
Week 1 Feb Half term	<p>Structure and function of the processor</p> <ul style="list-style-type: none"> <input type="checkbox"/> ALU, CU, Registers, Buses, data, address and control and how they relate to assembly language. <input type="checkbox"/> FDE Cycle and its effects on the registers. <input type="checkbox"/> CPU performance, pipelining and architectures. <input type="checkbox"/> GPUs and their uses (including those not related to graphics). <input type="checkbox"/> Multicore and Parallel system - Pipelining <p>Types of Processors</p> <ul style="list-style-type: none"> <input type="checkbox"/> CISC and RSIC, GPUs and Multicore and Parallel systems. <p>Input, output and Storage</p> <ul style="list-style-type: none"> <input type="checkbox"/> Different types of devices, Magnetic, flash and optical storage, RAM and ROM, Virtual Storage 	<p>Elements of computational thinking</p> <ul style="list-style-type: none"> <input type="checkbox"/> Thinking abstractly <input type="checkbox"/> Thinking ahead <input type="checkbox"/> Thinking procedurally <input type="checkbox"/> Thinking logically <input type="checkbox"/> Thinking concurrently 	<p>Tuesday Afterschool L2</p> <p>FDE cycle</p> <p>Von Neumann, Harvard and contemporary processor architecture.</p> <p>Types of processor The differences between and uses of CISC and RISC processors.</p>
Week 2	<p>Systems Software</p> <ul style="list-style-type: none"> <input type="checkbox"/> Operating Systems Types <ul style="list-style-type: none"> o Real time o Distributed o Embedded o Multi-tasking o Multi-user <input type="checkbox"/> Memory Management <input type="checkbox"/> Interrupts <input type="checkbox"/> Scheduling <input type="checkbox"/> BIOS <input type="checkbox"/> Device Drivers <input type="checkbox"/> Virtual Machines. 	<p>Programming techniques</p> <ul style="list-style-type: none"> <input type="checkbox"/> Variables vs Constants <input type="checkbox"/> Programming Constructs (Selection, Sequence, Iteration) <input type="checkbox"/> Scope of variables (Local vs Global) <input type="checkbox"/> Data types <input type="checkbox"/> Modularity (Function vs Procedure) <input type="checkbox"/> Passing by value vs passing by reference <input type="checkbox"/> Arrays <input type="checkbox"/> Files <input type="checkbox"/> IDE Tools <input type="checkbox"/> Type of errors and suitable test data <input type="checkbox"/> Programming Standards and maintainability 	<p>System software</p> <p>Interrupts, interrupt service routines and scheduling</p> <p>Operating system types</p>

Week 3	Applications Generation <ul style="list-style-type: none"> <input type="checkbox"/> Application software <input type="checkbox"/> Utilities <input type="checkbox"/> Open source vs closed source. <input type="checkbox"/> Translators: Interpreters, compilers and assemblers. <input type="checkbox"/> Stages of compilation <input type="checkbox"/> Linkers and loaders and use of libraries <input type="checkbox"/> How compilers work 	Algorithms <ul style="list-style-type: none"> <input type="checkbox"/> Analysis and design of algorithms for a given situation. <ul style="list-style-type: none"> <input type="checkbox"/> Bubble Sort <input type="checkbox"/> insertion sort <input type="checkbox"/> merge sort <input type="checkbox"/> quick sort <input type="checkbox"/> Binary search and linear search. 	Addition and subtraction of floating point binary
Week 4	Data Types <ul style="list-style-type: none"> <input type="checkbox"/> Binary calculations <input type="checkbox"/> sign and magnitude <input type="checkbox"/> two's complement <input type="checkbox"/> Hexadecimal <input type="checkbox"/> Character Sets (ASCII AND UNICODE CHARACTER SETS) <input type="checkbox"/> Addition and subtraction of floating point binary 	Programming techniques <ul style="list-style-type: none"> <input type="checkbox"/> Procedural vs OO programming <input type="checkbox"/> Class, objects, attributes, constructor method, getter/setter methods encapsulation, inheritance, polymorphism 	Floating point numbers and normalisation. Addition and subtraction of floating point binary
Week 5	Databases <ul style="list-style-type: none"> <input type="checkbox"/> Relational database, flat file, primary key, foreign key, secondary key, entity relationship modelling, normalisation and indexing. <input type="checkbox"/> Methods of capturing, selecting, managing and exchanging data. 	Algorithms Stacks & Queues <ul style="list-style-type: none"> <input type="checkbox"/> Explain how stacks and queues work as dynamic, linear data structures. <input type="checkbox"/> Algorithms for stack push and pop <input type="checkbox"/> Algorithms for queues dequeue and enqueue for both linear and circular queues <input type="checkbox"/> Use of pointers 	Data Structures Stacks and queues algorithms Linked Lists
Week 6	Networks <ul style="list-style-type: none"> <input type="checkbox"/> Characteristics of networks and the importance of protocols and standards. <input type="checkbox"/> The internet structure: <input type="checkbox"/> The TCP/IP Stack. <input type="checkbox"/> DNS <input type="checkbox"/> Protocol layering. <input type="checkbox"/> LANs and WANs. <input type="checkbox"/> Packet and circuit switching. <input type="checkbox"/> Network security and threats, use of firewalls, proxies and encryption. <input type="checkbox"/> Network hardware. <input type="checkbox"/> Client-server and peer to peer. 	Algorithms Linked Lists <ul style="list-style-type: none"> <input type="checkbox"/> Describe a linked list, as a dynamic structure, the use of nodes and pointers, class node. Algorithm for inserting a node. Describe how to remove a node. Describe how to traverse a linked list. <input type="checkbox"/> Record data structure. Algorithm for creating a record structure, adding new data, array of records. Compare record and class data structure - similarities and differences. 	OOP pseudo coding
Week 7	Software Development methodologies	Algorithms	Binary trees and graphs

	<input type="checkbox"/> Waterfall lifecycle, agile methodologies, extreme programming, the spiral model and rapid application development. <input type="checkbox"/> Merits and drawbacks of each methodology	<input type="checkbox"/> Describe a Binary Tree, how to add and delete a node. <input type="checkbox"/> Describe the Tree Traversals: <input type="checkbox"/> DFS (In order, post and pre) <input type="checkbox"/> BFS <input type="checkbox"/> Describe different types of graphs <input type="checkbox"/> Describe traversals (DFS and BFS) Algorithms: <input type="checkbox"/> Binary tree traversal algorithms <input type="checkbox"/> Dijkstra's and A* shortest path algorithm	Shortest path algorithms
Week 8 Easter Holidays	Data types <input type="checkbox"/> Floating point numbers <input type="checkbox"/> Addition, <input type="checkbox"/> Subtraction <input type="checkbox"/> Normalisation <input type="checkbox"/> Bitwise manipulation and masks	Tracing algorithms and Recursion <input type="checkbox"/> Trace an algorithm <input type="checkbox"/> Recursive vs iterative algorithms <input type="checkbox"/> Adv/ disadv	N/A
Week 9 Easter Holidays	Types of Programming Language <input type="checkbox"/> Need for and characteristics of a variety of programming paradigms. <input type="checkbox"/> Procedural, Assembly, Object-oriented languages. <input type="checkbox"/> LMC <input type="checkbox"/> Modes of address memory	BigO <input type="checkbox"/> Time and memory efficiency <input type="checkbox"/> Constant <input type="checkbox"/> Logarithmic <input type="checkbox"/> Linear <input type="checkbox"/> Polynomial <input type="checkbox"/> Exponential	N/A
Week 10	Compression <input type="checkbox"/> Lossy vs Lossless compression. Encryption and Hashing <input type="checkbox"/> Run length encoding and dictionary coding for lossless compression. <input type="checkbox"/> Symmetric and asymmetric encryption.	Computational Methods <input type="checkbox"/> Backtracking <input type="checkbox"/> Data mining <input type="checkbox"/> Heuristics <input type="checkbox"/> Performance modelling <input type="checkbox"/> Visualisation <input type="checkbox"/> Pipelining <input type="checkbox"/> Divide and conquer	Database Normalisation and SQL
Week 11	Web Technology <input type="checkbox"/> HTML, CSS and JavaScript.	Paper 2 Practice	HTML and CSS

	<input type="checkbox"/> Search engine indexing. <input type="checkbox"/> PageRank algorithm. <input type="checkbox"/> Server and client-side processing.		
Week 12	Boolean Algebra <input type="checkbox"/> Logic Gates and Truth Tables <input type="checkbox"/> Simplifying Boolean expressions <input type="checkbox"/> Karnaugh maps <input type="checkbox"/> Adders and D-type flip-flops	Paper 2 Practice	Boolean Algebra
Week 13	Legal, moral, cultural and ethical issues Computing related legislation <input type="checkbox"/> The Data Protection Act 1998. <input type="checkbox"/> The Computer Misuse Act 1990. <input type="checkbox"/> The Copyright Design and Patents Act 1988. <input type="checkbox"/> The Regulation of Investigatory Powers Act 2000.	Paper 2 Practice	Compression, Hashing, and Encryption
Week 14	Moral and ethical Issues The individual moral, social, ethical and cultural opportunities and risks of digital technology: <input type="checkbox"/> Computers in the workforce. <input type="checkbox"/> Automated decision-making. <input type="checkbox"/> Artificial intelligence. <input type="checkbox"/> Environmental effects. <input type="checkbox"/> Censorship and the Internet. <input type="checkbox"/> Monitor behaviour. <input type="checkbox"/> Analyse personal information. <input type="checkbox"/> Piracy and offensive communications. <input type="checkbox"/> Layout, colour paradigms, and character sets.		Moral and ethical issues
Week 15	Past Paper Practice		
Week 16			
Week 17	Paper 1 Exam Computer Systems - Written Paper		
Week 18	Paper 2 Exam Algorithms and Programming - Written Paper		