GCSE COMPUTER SCIENCE – LEARNING JOURNEY

At Home
Using personalised learning plan to focus revision on weakest topics using range of digital and print material.

In Class
Reviewing each topic, focussing on common misconceptions, tricky topics, attempting past exam question and understanding/applying the mark scheme.

Revision

Full Paper 2 Trial Exam

2.5 Programming Languages & IDEs
What are the characteristics of languages; high and low-level. What is the purpose of translators, compilers, interpreters? What is Little Man Computer? Tools in an IDE; editors, error diagnostics, run-time environments & translators.

2.3/2.4 End of Unit Test

2.4 Boolean Logic
Creating simple logic diagrams and truth tables. Combine Boolean and logical operators to solve problems

2.2 Programming Fundamentals
Using variables, constants, operators, inputs/outputs (*and shake it all about*). Sequences, selection & iteration (*oh… Hokey Cokey Cokey*). Arithmetic, integers, Boolean (oh no not Math ☹). Characters & string manipulation (in an orchestra?), using appropriate data types and casting (acting?)

2.1 Algorithms
Using abstraction, decomposition and algorithmic thinking to define a problem. Create structure diagrams & flowcharts. How to efficiently search and sort data. Writing algorithms using Python. What are binary, bubble, merge, insertion sorts. How do I identify bugs and fixes? What are trace tables?

2.3 Producing Robust Programs
Understanding why defensive programming is necessary. Using defensive designs (is that dangerous?) Then I have to test it all to make sure it works and debug if it doesn't, is that normal, boundary, invalid or erroneous? I will have to refine! Create code which is easy to maintain. Know the purpose of testing and types used for validation.

YEAR 11 GCSE

1.6 End of Unit Test

2.2 End of Unit Test

Full Paper 1 Trial Exam

1.6 Ethical, Legal and Cultural Concerns
What are the issues created and addressed by technology and the impact on society including ethical, legal, cultural, environmental and privacy (I'm back to being Police again)? Legislation (now I'm a politician), Data Protection, computer misuse, copyright and licences

Large Programming Challenge

1.5 System Software
What are operating systems & interfaces? What is memory, peripheral, user and file management? What is utility software and why do they need encryption, defragmentation and file management & data compression?

Trial Exam (1.1 – 1.4)

Programming Challenge
Re-Cap Sequence, Selection & Iteration

1.3 Computer Network Connections & Protocols
What are LANS & WANs? What factors affect the performance of networks? What does client server and peer-to-peer mean? What hardware do you use on a LAN?

1.3 End of Unit Test

1.4 Network Security
What forms of attack happen to computers and networks? What's malware, phishing (I fish), brute force attacks (dangerous) DoS (about?) Interception & theft (sounds dodgy). How to prevent attacks (who from?) What is an SQL injection, does it hurt?

1.5 End of Unit Test

Programming Challenge
Functions, Arrays & File Handling

YEAR 10 GCSE

1.2 Part 2 Data Representation
What is binary, denary, hexadecimal and ASCII? What is a character set? What are bitmaps, image resolution, colour depth and metadata? How can sound be sampled and stored? How does sampling rates, duration and bit depth affect the size of sound files and quality of its playback? What is compression?

Full Paper 1 Trial Exam

1.2 Part 1 Memory & Storage
What is primary & secondary storage and what is the purpose of RAM and ROM, the differences between them, the advantages and disadvantages? Why do we need virtual memory? What is flash memory? What are the common types of storage? What types are use for what? What is data capacity? What's a nibble (is that break time?)

1.1 End of Unit Test

Introduction
Specification requirements. Mark Scheme. Course calendar. Where to find resources. Folder Setup. Workbooks. Homework calendar. Student/Teacher expectations. Understanding of flipped and unflipped learning. What is a computer and what is computational thinking?

F.2 Computational Thinking Concepts
What is computational thinking? What has it got to do with computer science? Why do I need to use it? How do I apply these concepts when programming?

1.1 Systems Architecture
What is the CPU? How does it function? What are the components it is made of? What are the common characteristics which affect performance? What are embedded systems? Who is Von Neumann?

YEAR 9 GCSE

F.1 How Computers Work
Understand the hardware and software components that make up computer systems and how they communicate with one another and with other systems.

F.1/F.2 End of Unit Test

Learn to Code in Python
Input/Output, If statements, Loops, Text & Numbers, Random Values, Python Turtle, Creating robust programs, Lists, 2D Lists, Sub Programs. Python Challenges & practice.

HOMEWORK Current Topic Note Preparation // Prior Topic Online Tool Revision.

ASSESSMENT End of Topic Exam Papers // Classwork Depth & Understanding Assessment.

DNA Pseudocode Challenges // Past Exam Questions // Workbook DiRT

FINAL GRADE: Paper 1 – Computer Systems 1.5 hrs (50%) // Paper 2 - Computational Thinking & Algorithms 1.5hrs (50%)