Scheme of Learning: GCSE Computing

Topic Sequence:

1	2	3	4	5	6
Computational Thinking	**Data**	**Computers**	**Networks**	**Issues and Impacts**	**Programming**

Topic Overview:

In this unit, learners will gain an understanding and knowledge of how computer systems work. Starting with the building blocks of the microprocessor — logic gates — learners will discover how a computer system works and executes instructions.

Links:
GCSE Computing Topic 3

Lesson Sequence:

Lesson 1 Computer systems and system software: It will introduce learners to the two types of computer systems: general purpose and embedded systems. They will explore the characteristics of these systems and will learn how to identify embedded systems through practical activities.
Lesson 2 Introduction to the CPU: In this lesson the learners are introduced to the CPU and von Neumann architecture. They will learn about the individual components of the CPU and their roles in computation.
Lesson 3 The FDE cycle: In this lesson, the learners' knowledge about the components that make up the CPU and main memory will be furthered with the introduction of the fetch-decode-execute cycle (FDE).
Lesson 4 Main memory: In this lesson learners will be introduced to main memory, RAM and ROM, as well as cache. This lesson builds on the core knowledge from the previous lesson about CPU components.
Lesson 5 Secondary storage: Learners will be introduced to secondary storage and take an in-depth look at solid-state storage. They will discover the need for secondary storage, through assessing the devices they have learnt about already.
Lesson 6 Optical and magnetic storage: This lesson builds on from the first secondary storage lesson; it involves exploring optical and magnetic storage devices. Learners will need to be aware of how each type of storage operates, and to explain how data is written and read from each device.
Lesson 7 Selecting a storage device: This is the last of three lessons on secondary storage. The previous two lessons have equipped the learners with the knowledge they need to systematically select and justify a device for a given use.
Lesson 8 Computer specifications: This lesson will teach your learners how to evaluate a computer based on its specifications. They will discover the factors that limit a CPU's performance: clock speed, cache, and the number of cores. Learners will then use a computer component website to build computer systems of their own.
Lesson 9 Logic gates: In this lesson, learners will discover logic gates — the building blocks of processors at the heart of a computer system. Through the activities they will build an understanding of how logic gates are used to address real-world problems.
Lesson 10 Logic problems: In this lesson, learners will be introduced to the concept of three-input logic problems, and will be taught how to construct a three-input logic diagram, truth table, and expression

National curriculum links
Develop their capability, creativity and knowledge in computer science, digital media and information technology
Develop and apply their analytic, problem-solving, design, and computational thinking skills

Sequence of Lessons:	
1	Computer systems and system software
2	Introduction to the CPU
3	The FDE cycle
4	Main memory
5	Secondary storage
6	Optical and magnetic storage
7	Selecting a storage device
8	Computer specifications
9	Logic Gates
10	Logic Gate Problems

Topic Resources:

Knowledge Map:	Computer Systems	**Any other Resources:**	

Assessment:

Knowledge:	Interim assessment after lesson 3 Full assessment after lesson 10
Application of Knowledge:	Mastery Book

Supportive Reading:

Craig n Dave Videos	GCSE (1CP2) EDEXCEL: Topic 3A Hardware – YouTube GCSE (1CP2) EDEXCEL: Topic 3B Software & programming languages - YouTube
BBC Bite Size	General purpose computers - Computers - Edexcel - GCSE Computer Science Revision - Edexcel - BBC Bitesize
Revision Guide	Pearson REVISE Edexcel GCSE Computer Science Revision Guide inc online edition - 2023 and 2024 Weidmann, Ann, Selby, Cynthia: