EXAMPLE-MEDIUM TERM PLAN

Learning objectives Pupils can:	**Possible teaching activities**	**Learning outcomes** Pupils will:
Activity 1 [Average time to complete : 1–1.5 hours]		
Identify the range of computers encountered in everyday life. Analyse the capabilities of computers in general terms. Define the terms: computer, CPU, computer program, input, output. Speculate about the sorts of rules that computers require. Categorize rules as sequences of inputs, outputs, selections and iterations.	Starter: team competition – list as many computers as you have encountered in the past week – longest (relevant) list wins. From the list, individually classify the sorts of things that computers are good at. Examine a range of artefacts (smartphones, printer, MP3 player, camera, digital alarm clock, game controller, calculator, electronic thermostat, quadcopter, electronic toy), these may be physical or images. Each group receives a device and must describe its functions and identify the inputs and outputs. Watch a video of a simple game being played. Write your best guess about the sorts of inputs, outputs and rules that the game follows. Plenary: Class feedback – consolidated in mind map. Identifying main categories of instructions – input, output, sequence, selection, iteration.	Produce a composite list of computers in everyday life. Individually complete the lesson worksheet tasks. Pupils can answer questions e.g.: 1) Name 5 computers you use every day. 2) Give 3 reasons why computers are useful. 3) Give an example of iteration and selection in everyday life. 4) Pick a device and identify its inputs and outputs.
Activity 2 [Average time to complete : 1–1.5 hours]		
Compare and contrast media representations of the inner workings of a CPU. Recall that a transistor is a kind of automatic switch. Explain that transistors joined together make logic gates. Recall that all CPUs are made from connected logic gates. Write a specification in terms of inputs, simple rules and outputs for a given scenario.	Ask pupils to identify 'fact and fiction' in the images and movie clips shown e.g. *Tron*, *The Matrix*, *2001 a Space Odyssey* 'From Transistors to Logic Gates to Micro-processors' – teacher presentation with embedded questions. Teacher collates pupil answers during Q&A and publishes final presentation to the VLE. Pupils attempt Logic Gate truth table exercise – this is marked. Automatically via VLE. Introduce logic gate app – define the requirements in small groups – continue individually for homework.	Complete fact and fiction table (shared Google Doc). Final class presentation. Completed logic gate quiz – VLE. Homework sheet – 'Defining program requirements'.

Activity 3 [Average time to complete: 3 hours]		
Implement a working program prototype from a specification. Recall the types of logic gates and their functions. Understand and use a test strategy for program outputs using a truth table.	Paired programming – pupils create a logic gate app which demonstrates how a specific logic gate works. Suggested development tool: App Inventor, Scratch or MS Excel. The program displays a logic gate and accepts two inputs. It displays an output which should match the truth table (e.g. if input A & B are 'on' then for an AND gate the output will be 'on' or 'true'. The whole class will cover all of the logic gates between them, and more advanced learners can build multiple logic gates into their app. Pupils annotate their programs with a 'selection label' for any IF statements explaining what those statements do. Pupils peer-test all inputs to their logic gates, recording their findings in a truth table. Computing concepts plenary quiz.	Completed annotated programs printed out in folders. Completed test tables. Pupils complete the MCQ computing concepts quiz.