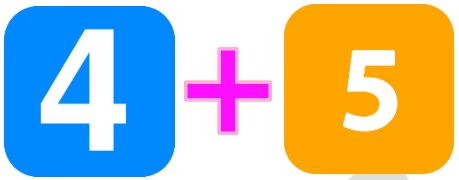
Scheme of Work



Year 4 and 5 Computer Science. IGCSE (Cambridge examinations)

Three lessons a week.

Mainly Weekly (occasionally fortnightly) homework. To read and complete tasks/questions using the textbook. Submission to Google Classroom.

Homework: This can be completed on paper (scanned, and then uploaded in school/class). It can also be completed on iPad or laptop/desktop. Feedback given in class after the due date of the homework and individual feedback graded either 1-7 and or with a score where relevant.

Examination. 100% written.

- Paper one computing principles 1hr 45min.
- Paper Two Algorithms and programming. 1hr 45 min.

Topic	**Learning objective(s)**	**Term/Sequence**	**Notes and pupil assessment**	**Homework**
Chapter one – data representation	To Understand the binary system used by computers	**Autumn 1**	Use textbook chapter one contents as guide	**Chapters 1-4** reading of some pages along with a task or the completion of question in the textbook.
Python programming and algorithmic writing and reading	To be able to write algorithms in pseudocode and in the computer language of python.	**Year 4 Autumn 1 and 2**	Use of python programming textbooks. Tasks set on Google classroom. **Coding tasks uploaded to Classroom**	**Chapters 1-4** reading of some pages along with a task or the completion of question in the textbook.

	To code in a procedural, functional and OO approach (some) in a more complex problem context from year 3. To download and use pre-built library code		Unit graded on 1-7 scale with comment. On paper and PC.	These tasks will meet stated learning objectives defined in the syllabus.
Robotics and programming	To use the context of robotics to further develop problem solving, algorithmic thinking and programming.	**Year 4** Spring 1 /2	Tasks set on Google classroom. **Evidence uploaded to Classroom** Unit graded on 1-7 scale with comment. Using new EVO Lego sets and iPad to program	**Chapters 5-7** reading of some pages along with a task or the completion of question in the textbook.
Physical Computing	To use BBC microbits (block-based and python) and Arduinos to explore embedded systems	**Year 4** Spring 1/2	Tasks set on Google classroom. **Evidence uploaded to Classroom** Unit graded on 1-7 scale with comment.	**Chapters 5-7** reading of some pages along with a task or the completion of question in the textbook.
Chatbot AI	To use https://www.motion.ai/ and/or python to program an AI.	**Year 4** Sprint 1/2	https://www.motion.ai/	**Chapters 5-7** reading of some pages along with a task or the completion of question in the textbook.
Examination paper introduction,	To understand the format of the examination.	**Year 4** Summer 1	Internal examination prep	**Chapters 8-10** reading of some pages along with a task or

pre-release and question practice.	To write pseudocode for the tasks set in the pre-release. To write these in python programming code.		Specimen and past paper work through and examination question practice	the completion of question in the textbook.
Programming with the BBC Microbit MOVE buggy (2018)	To further develop programming skills using a line following buggy with motors and other sensors	Summer 2 (3 weeks – 9 lessons)	BBC Microbit and MOVE buggy	**Chapters 8-10** reading of some pages along with a task or the completion of question in the textbook.
Web languages Internet technologies + comms Chapter 2	To understand data transmission, error checking To understanding security aspects To understand the nature of the Internet and www. To use and apply HTML, CSS and javascript	**Year 4** Summer 2/ Autumn 1	Use of W3 schools to assist or/and code academy. Revision guide	**Chapters 8-10** reading of some pages along with a task or the completion of question in the textbook.
Databases	To understand what is meant by the term database	**Year 5** Autumn 1	Option to create of a database and tables in MS Access or SQL using the raspberry Pi's	**Chapters 11-14** reading of some pages along with a task

	To understand the basic theoretical aspects of databases		Tasks set on Google classroom. **Evidence uploaded to Classroom** Unit graded on 1-7 scale with comment.	or the completion of question in the textbook.
Python programming and algorithmic writing and reading	To secure ability to **write algorithms in pseudocode** and translate to high-level python code. Linking to examination questions. To write programs using the LMC instruction set (low-level)	**Year 5** Autumn 1	Use of programming textbooks Tasks set on Google classroom. **Evidence uploaded to Classroom** Unit graded on 1-7 scale with comment.	**Chapters 11-14** reading of some pages along with a task or the completion of question in the textbook.
Digital security and ethics	To understand the need for security in the building and use of computer systems To understand the importance of computer ethics.	**Year 5** **Autumn 2**	Chapters 9 and 10	**Chapters 11-14** reading of some pages along with a task or the completion of question in the textbook.
Examination prep	To review and be able to answer examination	**Year 5** **Autumn 2** **Spring 1**	Use of on-line resources and textbook. Creation of notes and mind maps etc. in order to secure knowledge and Algorithm	

	questions for both examination papers.		reading and writing for examinations in June	
Examination prep	To review and be able to answer examination questions for both examination papers.	**Year 5 Spring 2/ Summer 1**		
Examination		**June**		