	Theme	Overview of key learning to take place	How learning will be assessed

Term 1	Re-cap Previous learning. Chapters5, 6, & 10. (Theory & practical)	**Key Topic 1: Security and ethics**
		In this section students will look at security and ethical issues. The importance of data and digital security and how systems can be protected from malicious software.
		  a) I can explain the importance of computer security.
		  b) I can identify the importance of data security.
		  c) I can explain what malware is and how computers can be protected against malware.
		  d) I can explain what encryption is.
		  e) I can explain the importance of encryption (symmetric and asymmetric)
		
		Key Topic 2: Introduction to programming
		In this section students will be introduced to a range of computer science concepts that will help to introduce programming concepts and how to practically solve problems.
		
		  a) I can explain what machine code is.
		  b) I can explain the difference between a high level and low level language
		  c) I can define top down design and structured diagrams.
		
		Key Topic 2: Algorithms and flow charts.
		In these sections students will be able to write simple algorithms to help identify how systems are developed. These algorithms will be associated with flow diagrams and pseudo code.
		
		  a) I can explain what an algorithm is and why they are used.
		  b) I can work out the purpose of a given algorithm.
		  c) I can show an understanding of systems and sub systems.
		  d) I can develop an algorithm that can be linked to real life examples and systems.
			Formative Assessment:
			There will be two main Formative Assessments per term. Grades are not given for these pieces of work as the focus is on supporting students to make improvements to future pieces of work.
			
			  • Checklist (to check for understanding.
			These will be conducted over a series of lessons usually between 6 to 9 lessons or after every two-to-three-week period.
			  • Class discussions will take place almost every lesson at the start/mid and end of lessons.
			  • Review sessions – These can usually take place after a shirt pop quiz or upon completion of a certain topic e.g. binary/hexadecimal.
			Other formative assessment examples:
			Fill in the blanks.
			Exam style questions.
			MCQ's
			Model to be created (using chosen software)
			Produce a presentation about findings.
			Creating a poster
			Mind map
			Storyboard
			Quizziz/Socrative.
			
			Summative Assessments: These will take place at the end of each unit studied in the Term. There will be a minimum of 2 End of Unit Assessments per Term.

Key Topic 3: Flowcharts and pseudo code.

In this section students will be able to how flowcharts are diagrammatically represented to follow a step by step system (or algorithm).

Students will be able to identify how a system works by looking at a flow chart and also construct flow charts using the correct symbols/shapes.

a) I can identify all the symbols in flow diagram and explain what each symbol/shape means.
b) I can construct a simple flow chart diagram.

c) I can write simple pseudo-code using the mathematical operations of (IF, THEN, ELSE, ENDIF, OR, REPEAT, WHILE, DO UNTIL)
d) I can use the following commands and statements(READ, SUM, PRINT,NUMBER, COUNT)

Key Topic 4: Validation/Verification & trace tables.

In this section students will be able to analyse and evaluate how to identify errors and erroneous data. This section will also allow students to understand how checks can be made using a range of validation techniques.

a) I can explain what validation and verification is.
b) I can describe a range of validation techniques such as: check digit, spell check, range check, format check, and type check.
c) I can explain how verification checks can be carried out.
d) I can use and apply suitable test data by identifying errors.
e) I can use trace tables to record each step within an algorithm and carry out a dry run using tables.
f) I can correct errors using trace tables.

Key Topic 5: High level and low-level languages

In this section students will be looking at different types of programming techniques and languages that are available, they will practically look at the development environment and understand

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- Second summative assessment will take place on week 9/10. The written test will be 30 marks and last about 30-40 mins of the lesson. (online/F2F)
- An average will be given of both summative assessment which will generate their Termly report.
- Additional assessment – Short piece of homework(SPEA approval needed). A written assignment or presentation of chosen topic in case of term 1 based on data representation (binary, denary, hexadecimal & ASCII)

key concepts of how programming can be used to develop simple programs.

a) I can explain the difference between high- and low-level languages.
b) I can explain the functions of an IDE and demonstrate how it is used.
c) I can define what a compiler and interpreter is.
d) I can explain what it means by syntax errors.

Key Topic 5: High level and low-level languages (practically)
Python programming will be used (using the IDE). Students will create simple small programs to help develop their programming skills and gain a deeper understanding of programming concepts.
Example content (click here)

a. I can use an IDE (python) and use its basic features.
b. I can explain the difference between a high level and low-level language (scratch & python).
c. I can define compilers, interpreters, assemblers & translators.
d. I can explain what causes syntax errors and logical errors.

Term 2	Chapters 9, 10, 11 & 12)	**Key Topic 1: Problem solving and design.** In this section students will be visually looking at how systems are developed and created to aid with problem solving. Students will look at the fundamentals of algorithms and how these can be developed using a flow diagram to represent a system. a. I can define what a computer system is using the 'top down approach'. b. I can correctly identify and use flow chart symbols. c. I can create a flow diagram that shows the steps of an algorithm. d. I can create and write basic pseudo code. e. I can define and explain different validation techniques using examples. f. I can use trace tables to record results.	**Formative Assessment:** There will be two main Formative Assessments per term. Grades are not given for these pieces of work as the focus is on supporting students to make improvements to future pieces of work. • Checklist (to check for understanding. These will be conducted over a series of lessons usually between 6 to 9 lessons or after every two-to-three-week period. • Class discussions will take place almost every lesson at the start/mid and end of lessons. • Review sessions – These can usually take place after a shirt pop quiz or upon

| | | **Key Topic 2: Python programming.**
In this section students will practically be using python programming use the IDE program to create and develop simple programs.
Python programming is an essential component as students will be preparing for the pre-release material.

Python basics – see link

Python for beginners

Python turtle – a beginners guide

In python I can do the following:
    a. I can create and develop a simple python program e.g. "Hello world".
    b. I can explain what variables are and create a program with variables.
    c. I can explain what iteration is.
    d. I can develop a program with different types of data.
    e. I can use concepts such as sequence, selection, iteration, totally and counting.

Students will be creating and developing some complex programs based on teacher given scenarios. They will then create, develop and test their program.
All scenarios will be linked with the Cambridge internationals pre-release material.

Preparation of pre-release material. Please take a look at the syllabus and previous tasks that have been set by Cambridge. Students will look at past pre-release material and solve the problems based on those tasks. | completion of a certain topic e.g. logic gates & input output devices.
• (if core)
Other formative assessment examples:
Fill in the blanks.
Exam style questions.
MCQ's
Model to be created (using chosen software)
Produce a presentation about findings.
Creating a poster
Mind map
Storyboard
Quizziz/Socrative

Summative Assessments: These will take place at the end of each unit studied in the Term. There will be a minimum of 2 End of Unit Assessments per Term.

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		See syllabus link	
Term 3		**Examination practice** All content is shared via teams' pages and students should be able to access all materials as suggested. Teachers will be updating their team's files on a regular basis so that students can follow and complete tasks. Click link for revision guidance. Students will heavily focus on their mock exams and end of year examinations. During this term students will be looking at past exam papers/specimen papers and examiners reports. All student must be able to: I can use the PETL exam technique to answer 4-8 mark questions. Example material (click link) Revision topic 1 – Data representation Revision topic 2 – Communication & internet Revision topic 3 – Logic gates and circuits Revision topic 4 – Operating systems Revision topic 5 – Input & output devices Revision topic 6 – Memory & data storage Revision topic 7 - CPU & computer architecture. Revision topic 8 - Low- and high-level programming languages. Revision topic 9 - Pseudo code and flowcharts. Revision topic 10 - Database applications. Past exam papers Revision techniques	**Formative Assessment:** There will be two main Formative Assessments per term. Grades are not given for these pieces of work as the focus is on supporting students to make improvements to future pieces of work. • Checklist (to check for understanding. These will be conducted over a series of lessons usually between 6 to 9 lessons or after every two-to-three-week period. • Class discussions will take place almost every lesson at the start/mid and end of lessons. • Review sessions – These can usually take place after a shirt pop quiz or upon completion of a certain topic e.g. binary/hexadecimal. • (if core) **Other formative assessment examples:** Fill in the blanks. Exam style questions. MCQ's Model to be created (using chosen software) Produce a presentation about findings Creating a poster Mind map Storyboard Quizziz/Socrative **Summative Assessments:** These will take place at the end of each unit studied in the Term. There will be a minimum of 2 End of Unit Assessments per Term.

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