Subject Curriculum Overview for Academic Year 2022/2023

Subject: Computer Science	Subject Leader: L Kenvyn	Year Group: 9	AUTUMN TERM
Topic	**Key Learning Points**	**Key Vocabulary**	**Assessments**
Input, output and simple calculations	• To define the term Variable • To understand Variable types • To understand language levels • To print text in Python • To get user input in Python • To carry out calculations in Python • To manipulate strings in Python	Abstraction Decomposition High-level language Low-level language Casting Functions String Integer Concatenation	Students will be assessed formatively through the completion of recall homework tasks along with a formal end of half term assessment completed under exam conditions. The assessment will largely be multiple choice and short answer questions. The assessment will monitor understanding of essential knowledge from a variety of different modules learnt throughout this year.
Selection (If) Statements	• To read & create Flowcharts • Be able to use If statements • Be able to use Elif statements • Be able to use Else statements • To define selection • Use the AND, OR & NOT operators in a Python program	Flowchart If statement Elif statement Else statement Selection Operators	
Repetition, Iteration (loop) Statements	• To create For loops • To create While loops • To use Trace Tables • To define iteration • To define validation • To choose the right type of iteration for a given problem	Iteration Trace tables Fixed loop For loop While loop Validation	
Storing multiple values using lists	• To create a list within python • To add to a list within python • To create a 2D list within python • To edit a list within python • To read through a list using iteration	List Array 2D list Matrix Append	

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Subject: Computer Science	Subject Leader: L Kenvyn	Year Group: 9	SPRING TERM
Topic	**Key Learning Points**	**Key Vocabulary**	**Assessments**
Predefined functions	• To utilise the Max & Min functions within Python • To utilise the Sum function within Python • To utilise the Append function within Python • To utilise the Split & Index functions within Python • To utilise the Pop & Insert functions within Python • To utilise the Remove function within Python • To utilise the Random module within Python	Functions Predefined Append Index Indexing	Students will be assessed formatively through the completion of recall homework tasks along with a formal end of half term assessment completed under exam conditions. The assessment will largely be multiple choice and short answer questions. The assessment will monitor understanding of essential knowledge from a variety of different modules learnt throughout this year.
Modular Programming	• To define modular • To define sequential • To identify and write sequential code • To identify and write modular code • To explain the concept of local and global variables • To write simple procedures in python	Modular Sequential Global Local Parameter	
File Handling	• To write to external files from within Python • To append external files from within Python • To create external files from within Python • To delete external files from within Python • To pull data from external files with Python	Appending Write Read External Internal	
Search & Sort	• To define linear search and explain how it functions • To define Binary search and explain how it functions • To define Merge sort and explain how it functions • To define Bubble sort and explain how it functions • To define Insertion sort and explain how it functions	Search function Sort function Linear search Binary search Merge sort Bubble sort Insertion sort	

Subject Curriculum Overview for Academic Year 2022/2023

Subject: Computer Science	Subject Leader: L Kenvyn	Year Group: 9	SUMMER TERM
Topic	**Key Learning Points**	**Key Vocabulary**	**Assessments**
Data representation	• To convert Binary to Denary • To convert Binary to Hex • To convert Hex to Denary • To define compression • To define character sets • To explain how images are stored • To explain how sound is stored	Binary Hexadecimal Denary Character sets Unicode Compression Lossy Lossless Bitmap Bit rate Sample rate	Students will be assessed formatively through the completion of recall homework tasks along with a formal end of half term assessment completed under exam conditions. The assessment will largely be multiple choice and short answer questions.
Extended programming project	• To confidently use variables. • To confidently use selection. • To confidently use iteration. • To confidently use lists. • To confidently use functions. • To confidently read and write to an external file.	Variables Selection Iteration Lists Functions External files	The assessment will monitor understanding of essential knowledge from a variety of different modules learnt throughout this year.

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How parents can support learning in the subject this academic year

Encourage students to program at home. Free software such as “Python IDLE” can be used on a Windows or Mac. There are free online websites that can be used to practice code as well such as https://trinket.io/

An hour or two programming at home a week will enable students to develop their programming skills in leaps and bounds. Learning programming is like learning a language, the more you get to practice and use it the more familiar you become with it, until fluency is achieved.

Recommended Reading

- Beginner Python concepts - https://www.w3schools.com/python/
- Advanced Python concepts - https://www.w3resource.com/python/python-tutorial.php
- Step by step guide to Python - https://www.programiz.com/python-programming

Points to note

Year 9 is a foundation to KS4 year. It is assumed that students have no prior knowledge and therefore this year is used to provide all students with secure key skills and knowledge in order to succeed further.

There is a textbook but it stays in school as a lesson aid, there is no revision guide used this year.