Subject: Computer Science **Year group: 7**

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
E-safety and using computer systems.	Inside a computer	Computational thinking (Flowol)	Binary code conversion and ASCII	Computational thinking (Python Turtle turtle)	Basic coding (Python)
Accessing and using the school systems and resources	Word processing	Presentation software	Spreadsheets	Screen printing and cropping images	Advanced word – processing including use of hyperlinks.
Identifying and dealing with online dangers	CPU	Using flow charts top represent computational algorithms	Binary conversion to and from Denary/Decimal	Sequencing instructions	Recursion vs Iteration
Using computers efficiently and organising online folders and files.	Hardware and software and peripheral devices	Flowcharts to represent real life contexts	ASCII code	Using iterative techniques to create complex designs.	Creating simple programs in Python
Assessment	**Assessment**	**Assessment**	**Assessment**	**Assessment**	**Assessment**
In class end of unit online test.	In class end of unit online test.	In class end of unit online test.	In class end of unit online test.	In class end of unit online test.	In class end of year online test.

Skills developed through the year:

An ICT strand is embedded in all the Computer Science topics throughout the year to ensure that students will develop confidence in day-to-day use of the computer, using school systems and organising their digital work. They will learn the basics of how computer systems work and develop their computational thinking skills through the study of basic algorithms in the form of flowcharts. They will develop their coding skills and will be able to apply the three basic coding principles, sequencing, selection and iteration.

Extra-Curricular Opportunities:

Coding club

Subject: Computer Science **Year group: 8**

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Networks and the Internet	Advanced binary and data representation	Python - Coding with numbers	Boolean logic and introduction to lists	Webpages - HTML and CSS code	Cybercrime project
Presentation software	Spreadsheets	Presentations	Manipulating images	Folder and file management	Project management skills
Identify key components of a network.	Binary arithmetic	Data types and iteration	Using Logic gates	Using HTML (Hypertext Markup Language) to design a website	Researching digital information sources
Understand how data is transferred across the Internet.	Understanding how text, images and sound are produced on computers.	Producing digital solutions for challenging problems.	Truth tables	Using CSS Cascading Style sheets) to improve	Editing secondary information
Assessment	**Assessment**	**Assessment**	**Assessment**	**Assessment**	**Assessment**
In class end of unit online test.	In class end of unit online test.	In class end of unit online test.	In class end of unit online test.	In class end of unit online test.	In class end of year online test.

Skills developed through the year:

ICT continues to be embedded in all the Computer Science topics throughout the year to ensure that students will develop confidence in day-to-day use of the computer. In year 8, our students will learn about networks, binary arithmetic, and logic gates. They further develop their coding skills adding HTML, CSS and SVG to the list of languages accessed. They will be able to apply and integrate the three basic coding principles, sequencing, selection and iteration while developing an understanding of how coding can be made more efficient.

Subject: Computer Science **Year group: 9**

GCSE title: Computer Science (J277)

Exam Board: OCR

J277/01: Computer systems
Written paper: 1 hour and 30 minutes.
50% of total GCSE
J277/02: Computational thinking, algorithms and programming
Written paper: 1 hour and 30 minutes.
50% of total GCSE

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Introduction to Computational thinking and coding in Python	Use of algorithms in computer programs to solve problems.	Search algorithms	Intermediate coding skills: Iteration	Sorting algorithms	Computer architecture
Decomposition	Pseudocode	Binary search algorithm	Lists and arrays	Bubble sort and insertion sort	CPU structure and performance
Basic coding principles: Sequencing, Selection	Linear search algorithm	Flowcharts	Advanced data structures	Merge sort	Von Neumann architecture
Variables and data types	Abstraction	Use of an Integrated Development Environment	Coding to solve basic problems	Functions and sub-routines	Fetch, decode, execute cycle
Assessment	**Assessment**	**Assessment**	**Assessment**	**Assessment**	**Assessment**

In class end of unit online test.	In class end of unit online test.	In class end of unit **paper** test.	In class end of unit online test.	In class end of unit online test.	In class end of year **paper** test.

Skills developed through the year:

- Computational thinking
- Designing, creating and refining algorithms.
- Searching and sorting algorithms.
- Programming fundamentals
  - Sequence
  - Selection
  - Iteration (count- and condition-controlled loops)
- Using a range of data types.
- Additional programming techniques:
- The use of basic string manipulation.
- The use of basic file handling operations:
  - Open
  - Read
  - Write
  - Close

Extra-Curricular Opportunities:

Trips to places of interest, such as Bletchley Park

Resources to support independent learning – Include titles of text/revision books and useful other resources:

- Teach ICT – KS4
- repl.it
- w3schools.com

Subject: Computer Science **Year group: 10**

GCSE title: Computer Science (J277)

Exam Board: OCR

J277/01: Computer systems
Written paper: 1 hour and 30 minutes.
50% of total GCSE
J277/02: Computational thinking, algorithms and programming
Written paper: 1 hour and 30 minutes.
50% of total GCSE

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Computational thinking and coding mini project.	Programming Languages	Boolean logic	Primary and secondary memory	Operating systems	Ethical, legal, cultural and environmental impact
Defensive design	Assembly code	Logic circuits	Data storage/Units	File management	Legislation relevant to Computer Science
Testing	Binary and Hexadecimal	Truth tables	Compression	User management	Future technology
Trace tables	Binary arithmetic	Memory and storage	Data representation	Utility software	Exam practice

Assessment	Assessment	Assessment	Assessment	Assessment	Assessment
In class practical test.	In class end of unit online test.	In class end of unit **paper** test.	In class end of unit online test.	In class end of unit online test.	In class end of year **paper** test.

Skills developed through the year:

- Computational and logical thinking
- Using binary arithmetic and logic to solve problems.
- Problem solving through computer program design.
- Advanced programming techniques.
- Evaluating the effectiveness of computer programs.

Extra-Curricular Opportunities:

Trips to places of interest, such as Bletchley Park

Resources to support independent learning – Include titles of text/revision books and useful other resources:

Teach ICT – KS4

Subject: Computer Science **Year group: 11**

GCSE title: Computer Science (J277)

Exam Board: OCR

J277/01: Computer systems
Written paper: 1 hour and 30 minutes.
50% of total GCSE
J277/02: Computational thinking, algorithms and programming
Written paper: 1 hour and 30 minutes.
50% of total GCSE

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1
Coding project	Databases	Networks and topologies	Wired and wireless networks, protocols and layers	Revision
Coding project	Records and unique identifiers	Topology comparison	Common protocols	Revision
Threats to computer systems and networks	SQL	Network performance	The Internet	Revision
Identifying and preventing vulnerabilities	Relational databases	Network administration	Encryption	Revision
Assessment	**Assessment**	**Assessment**	**Assessment**	**Assessment**

In class end practical test.	Internally assessed mock examination (paper).	In class end of unit online tests.	In class final mock examination (paper).	

Skills developed through the year:

- Computational thinking.
- The use of databases and records to store data.
- The use of SQL to search for data.
- Defensive design:
  - Testing
  - Iterative
- Selecting and using suitable test data:
  - Normal
  - Boundary
  - Invalid/Erroneous
- Understanding of Internet and network administration.
- The ability to make informed decisions about the use and implications of different technologies.
- Understanding of current and emerging technologies in a range of contexts.

Extra-Curricular Opportunities:

Trips to places of interest, such as Bletchley Park

Resources to support independent learning – Include titles of text/revision books and useful other resources:

Teach ICT – KS4