**OCL Computing**

**Long Term Plan**

**Year 7**

**Overview:** In year 7 students will arrive with varying levels of computing knowledge from the primary school they have attended and the technology they have access to at home. In order to build their confidence, students will start to use a variety of different software and web apps to improve their digital literacy starting with password security and logging on in lesson 1.

Autumn 1 will give students opportunity to familiarise themselves with the computing lab and/or iPad. Many students will soon be creating social media accounts if they have not already. Student will be looking at what respectful online communication looks like and how messages online can seem without context. Students will then look at cyberbullying and create a presentation on the subject using MS PowerPoint. This allows students to cover important e-safety topics while still getting hands-on experience with their computer and commonly used software. In Autumn 2 students will be using another common software package, MS Excel, to work with data. The purpose of this unit is for students to understand how data are collected, analysed, and used. Spring 1 introduces students to networks and how they aid communication between computers. This unit will first look at the benefits of computer networks, how they are created and how they operate. The second half of the unit will focus on the Internet, smart devices and how this is changing the way we live our lives. Spring 2 will be the first experience of computer programming for many students. They will be using Scratch a web-based visual programming language that allows students to create programs by connecting premade code blocks. Student will be able to explore the programming concepts of sequence, selection, and iteration without worrying about syntax errors. This unit will set the foundation of students programming knowledge, embedding key concepts that they will continue to explore throughout KS3 and KS4. Summer 1 will focus on creating text and image media while also looking at legal issues such as copyright law and plagiarism. This unit will also look at credibility, sourcing information, and fake news. Finally, in Summer 2 students will look at how computers work. Students will first study hardware and the role of different components. Then they will look at software in general terms; instead of focusing on specific packages, they will understand the role of different archetypes of software and operating systems.

**Software Packages:** Students will use a combination of a web browser, Formative.com, MS Teams and MS OneNote throughout each unit. In addition, throughout year 7 they will use MS Office(PowerPoint, Excel and Word), scratch.mit.edu, and photopea.com.

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| **7** | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
|  | **7.1 Using Technology Safely** | **7.2 Data Modelling (Spreadsheets)** | **7.3 Computer Networks** | **7.4 Scratch Programming 1** | **7.5 Multimedia 1** | **7.6 Computer Systems**  |
| SOI Core Concept Links | 1, 2, 4, 5, 11 | 1, 2, 11 | 8, 10, 11 | 1, 3, 6, 9, 11 | 1, 2, 4, 5, 10, 11 | 1, 2, 7, 11  |
| What will be covered? | 1. Passwords and logging on
2. Getting started with Horizons
3. Respectful Communication Online
4. What is cyberbullying?
5. Presenting to an Audience 1
6. Presenting to an Audience 2
 | 1. What is a spreadsheet?
2. Quick Calculations
3. Collecting Data
4. Working with Data
5. Working with Data 2
6. Bringing it all together
 | 1. Introduction to Networks
2. Network Hardware
3. Wired and Wireless Networks
4. The Internet
5. The internet of Things
6. The World Wide Web

Safer Internet Day (Optional) | 1. Sequence and Variables
2. Selection
3. Operators
4. Iteration
5. Problem Solving
6. Bringing it all together
 | 1. Word Processing
2. Licencing and copyright
3. Credibility
4. Email and online images
5. Putting content online
6. Assessment
 | 1. Peripherals
2. Internal Hardware
3. Storage
4. Application software
5. System software
6. Bringing it all together
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**Year 8**

**Overview:** In year 8 students will continue to develop their digital literacy with multiple opportunities to have hands of experience with a variety of software packages and web applications. Students will build upon their practical skills from year 7, particularly in programming and media creation. Students will also begin to look at how computers represent data and solve problems.

Autumn 1 will give students the opportunity to look at creating some more complex programs in Scratch. After a recap of selection and iteration, students will start to look at how subroutines help us to organise and create one aspect of a program at a time, how instructions can be passed to other parts of a program, then pull all this together to create a complex program. In Autumn 2 students will study the binary number system, why it is used by computers and how to convert between this and our denary number system. Once they have an understanding of binary numbers, they will look at the logic gates AND, OR and NOT and their respective truth tables. In Spring 1 students will look at using computational thinking to model and solve problems. They will also explore different methods of representing algorithms, including using flowcharts and written pseudocode. In Spring 2 students will move onto their second programming language Python. This first unit will focus again on the core programming concepts of Sequence, Selection, and Iteration. As a text-based language students will now encounter syntax errors and will need to interpret error messages to help debug their own code. In Summer 1 students will again have the opportunity to create and edit media. In this unit they will look at images in more detail studying both bitmap and vector graphics. Students will then look at using these image files to create keyframe animations. Finally, in Summer 2 students will have the opportunity to look at how websites are created and create their own website. While creating web pages, students will also focus on good web design practices and the importance of making websites accessible to everybody.

**Software Packages:** Students will use a combination of a web browser, Formative.com, MS Teams and MS OneNote throughout each unit. In addition, they will use scratch.mit.edu, logic.ly, Python, MU IDE, photopea.com, wickeditor.com, Notepad ++

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| **8** | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
|  | **8.1 Scratch Programming 2** | **8.2 Binary and Boolean Logic** | **8.3 Computational thinking and algorithms** | **8.4 Programming with Python 1** | **8.5 Multimedia 2** | **8.6 Developing for the Web** |
| SOI Core Concept Links | 1, 3, 6, 9, 11 | 9, 11 | 1, 2, 6, 9, 11 | 1, 3, 6, 9, 11 | 1, 4, 11 | 1, 4, 5, 8, 10, 11 |
| What will be covered? | 1. Selection 2
2. Iteration 2
3. Subroutines
4. Sensing and Broadcasting
5. Building a game
6. Assessment
 | 1. Thinking in 1s and 0s
2. Thinking with 8 bits
3. Converting from denary
4. Logic gates
5. Truth Tables
6. Assessment
 | 1. Algorithms
2. Computational thinking
3. Representing Algorithms
4. Searching and sorting 1
5. Searching and sorting 2
6. Assessment
 | 1. Your first Python program
2. Debugging
3. Working with numbers
4. Selection
5. Iteration (While)
6. Assessment
 | 1. Bitmap graphics
2. Vector graphics
3. Animation 1
4. Animation 2
5. Project
6. Assessment
 | 1. Creating a webpage with HTML
2. Styling a webpage with CSS
3. Adding images and other content
4. Making website accessible
5. Navigating to other pages
6. Creating a personal website
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**Year 9**

**Overview:** As this year group was the first to be offered Computer Science at KS3 whilst it was still in its infancy at Brightstowe, and due to Year 9 resources still being in development at Oasis Community Learning, year 9 students are being provided with a mixture of the new OCL resources from years 7 and 8 this year, to fill any gaps in their knowledge when compared to the new OCL curriculum. Next year this document will be updated with a new list of topics that progress naturally from those that you see in the year 7 and year 8 sections above.

Autumn 1 starts with students looking at binary code, with a focus on how it is used to represent data. Students will gain insight into how computers actually store the files on the computer and how binary can be interpreted to display images or play audio. In Autumn 2 students will continue to study the binary number system, why it is used by computers, and have an opportunity to further practice converting between this and our denary number system. Once they have further developed their understanding of binary numbers, they will look at the logic gates AND, OR and NOT and their respective truth tables. In Spring 1 students will look at using computational thinking to model and solve problems. They will also explore different methods of representing algorithms including using flowcharts and written pseudocode. In Spring 2 students will move onto their second programming language Python. This first unit will focus again on the core programming concepts of Sequence, Selection, and Iteration. As a text-based language students will now encounter syntax errors and will need to interpret error messages to help debug their own code. In Summer 1 students will again have the opportunity to create and edit media. In this unit they will look at images in more detail studying both bitmap and vector graphics. Students will then look at using these image files to create keyframe animations. Finally, in Summer 2 students will look at how computers work. Students will first study hardware and the role of different components. Then they will look at software in general terms, instead of focusing on specific packages they will understand the role of different archetypes of software and operating systems.

**Software Packages:** Students will use a combination of a web browser, Formative.com, MS Teams and MS OneNote throughout each unit. In addition, they will use scratch.mit.edu, logic.ly, Python, MU IDE, photopea.com, wickeditor.com, Notepad ++

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| **9** | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
|  | **9.1 Binary and Data Representation** | **8.2 Binary and Boolean Logic** | **8.3 Computational thinking and algorithms** | **8.4 Programming with Python 1** | **8.5 Multimedia 2** | **7.6 Computer Systems**  |
| SOI Core Concept Links | 9, 11 | 9, 11 | 1, 2, 6, 9, 11 | 1, 3, 6, 9, 11 | 1, 4, 11 | 1, 2, 7, 11  |
| What will be covered? | 1. Converting binary
2. Binary addition
3. Data Representation ASCII
4. Data Representation Images
5. Data Representation Sound
6. Assessment
 | 1. Thinking in 1s and 0s
2. Thinking with 8 bits
3. Converting from denary
4. Logic gates
5. Truth Tables
6. Assessment
 | 1. Algorithms
2. Computational thinking
3. Representing Algorithms
4. Searching and sorting 1
5. Searching and sorting 2
6. Assessment
 | 1. Your first Python program
2. Debugging
3. Working with numbers
4. Selection
5. Iteration (While)
6. Assessment
 | 1. Bitmap graphics
2. Vector graphics
3. Animation 1
4. Animation 2
5. Project
6. Assessment
 | 1. Peripherals
2. Internal Hardware
3. Storage
4. Application software
5. System software
6. Bringing it all together
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