Computing Year 8 Curriculum Map

Notre Dame Catholic College

YEAR 8	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Curriculum Content	**Unit 3 Internet and Communications – 3.1 Network Threats and Solutions (Internet) link to KS3 Programme of Study.** **Composite = Understand different security threats to a network system:** In Year 7 and Year 8, pupils have developed an understanding of computer hardware and further explored important hardware components such as the CPU. Pupils have also investigated the language (binary) computers use too communicate with its hardware and how it makes simple decisions using logic gates too. In the last unit pupils further explore data representation by investigating another number system hexadecimal and how characters are converted to binary too. Last year pupils developed an understanding of how computer devices communication with each other (networks) and now this unit will explore the threats posed to networks, how they affect people and how these threats can be prevented. **Component 3.1.1** Investigating network threats (social engineering) and solutions **Component 3.1.2** Investigating network threats (malware) and solutions. **Component 3.1.3** Investigating network threats (attacks) and solutions.	**Unit 3 Internet and Communications – 3.2 E-Safety Data Security (Communications) link to KS3 Programme of Study.** **Composite = Understand the effects of Data Security and develop a media product using a range of IT skills:** In Year 7 and Year 8 pupils, have learnt about the hardware needed for a computer device to function, pupils also learnt about the language (binary) computers use to communicate with its own hardware and how it made simple decisions using logic gates. Pupils also learnt about how computer devices communicate with each using networks and this year investigated the threats that can occur too. Continuing on from last year this unit will focus on pupils continuing to develop their IT skills by using digital devices to communicate information, by planning a digital product and also develop an understanding of a current e-safety issue data security. **Component 3.2.1** Data security and requirements (video advert) Data security and planning -storyboards (video advert) **Component 3.2.2** Data security and collecting assets (Copyright) **Component 3.2.3** Data security and video advert design (video editing software) **Component 3.2.4** Data security and advanced video editing (video editing software)	**Unit 4: Algorithms & Programming: Algorithms & Coding – Python link to KS3 Programme of Study.** **Composite = Understand how to construct different algorithms and programming code for various problems using a range of constructs:** Over the last two years, pupils have learnt about the hardware needed for a computer device to function, pupils also learnt about the language (binary) computers use to communicate with its own hardware and how it made simple decisions using logic gates. Pupils also learnt about how computer devices communicate with each using networks and this year investigated the threats that can occur too. In the last unit pupils continued to develop their IT skills by creating a digital product about a current e-safety issue. Pupils will continue to learn to develop their programming skills by developing algorithms for (iteration and arrays). In this unit pupils will continue to learn to develop their programming skills by developing algorithms for (iteration and arrays). Pupil will further develop their coding skills using Python coding software to create programs. **Component 4.1** Creating algorithms – Flow charts (iteration) **Component 4.2** Creating algorithms – Pseudo code (iteration & arrays) **Component 4.3** Developing programming techniques – coding advanced programs (sequence, selection and iteration) in Python	**Unit 4: Algorithms & Programming: Algorithms & Coding – Python link to KS3 Programme of Study.** **Composite = Understand how to construct different algorithms and programming code for various problems using a range of constructs:** Over the last two years, pupils have learnt about the hardware needed for a computer device to function, pupils also learnt about the language (binary) computers use to communicate with its own hardware and how it made simple decisions using logic gates. Pupils also learnt about how computer devices communicate with each using networks and this year investigated the threats that can occur too. In the last unit pupils continued to develop their IT skills by creating a digital product about a current e-safety issue. Pupils will continue to learn to develop their programming skills by developing algorithms for (iteration and arrays). In this unit pupils will continue to learn to develop their programming skills by developing algorithms for (iteration and arrays). Pupil will further develop their coding skills using Python coding software to create programs. **Component 4.4** Developing programming techniques – coding advanced programs (Arrays) in Python **Component 4.5** Creating a programming project in Python	**Unit 1 Computers – Inside the CPU link to KS3 Programme of Study.** **Composite = Understand how the CPU (Central Processing Unit) functions and explore factors that can affect its performance:** In Year 8 pupil's will continue their computing journey by studying the four strands outlined in Year 7 by exploring these themes in greater depth. Year 7, pupils explored the hardware that was involved in running a computing device. This unit will develop this strand by focusing on one particular piece of important hardware which is the CPU (Central Processing Unit) and the elements (items) that work inside the CPU. Pupils will gain an understanding of how the CPU processes data and instructions and what elements (items) effect the performance (speed) of the CPU too. **Component 1.1 -** Investigating internal hardware component the CPU by exploring the CU (Control Unit) and ALU (Arithmetic Logic Unit). **Component 1.2 –** Further investigate the fetch, decode & execute cycle (Registers) **Component 1.3 -** Investigating the elements that effect the CPU Performance. **Component 1.4 -** Investigate the effects hardware components have on the performance a computer device.	**Unit 2 Data – Data Representation Hexadecimal and Character link to KS3 Programme of Study.** **Composite = Understand how binary can be simplified and how devices understand inputted data (Characters):** In Year 7 and Year 8, pupils have developed an understanding of computer hardware and further explored a very important hardware component the CPU. In year 7 pupils learnt about the language (binary) computer devices use to communicate and developed skills to convert between two number systems. This unit pupils will develop this topic further by learning about another number system computer devices use called hexadecimal and how characters are converted into binary too. **Component 2.1** Carrying out hexadecimal and binary conversions **Component 2.2.** Carrying out hexadecimal and denary conversions **Component 2.3** Investigating how character (ASCII & Unicode Character Sets) convert to binary
Prior knowledge and skills (from previous year / key stage)	Pupils maybe aware of some threats that can affect a network such as viruses. Pupils will have no prior knowledge of other network threats such as attacks.	Pupils will have some awareness of not sharing personal information online. Pupils may have some prior IT application skills i.e. inputting text, inserting images etc Pupils will have some prior knowledge of client requirements and planning documents such as visualisation diagrams. Pupils will have no prior knowledge of mood boards or the Copyright Law.	Pupils should have some understanding of algorithms and constructs. Pupils should recognise some constructs i.e. sequence and selection and flowcharts. Pupil will have some prior knowledge of pseudo code.	Pupils may have some skills in creating programs using a graphics based and text based coding language. Pupils will have no prior knowledge of use of iteration and arrays.	Pupils should be aware of hardware that functions inside a computer device such as the CPU (Central Processing Unit) and its basic function i.e. to process and execute instructions. Pupil will have no prior knowledge of hardware inside the CPU and factors that can affect the performance of the CPU too.	Pupils should recognise keywords such as binary (byte) and denary (decimal). Pupils will be aware of the 2 base and 10 base number system. Pupils will have no prior knowledge of hexadecimal conversions or how characters are represented.

Vocabulary / Key Subject Terminology	Networks, Devices, Malware, Virus, Worm, Trojan Horse, Spyware, Social Engineering, Phishing, Attacks, Cyber, Criminal, Preventions, Solutions, Passwords, Antivirus, Software, Firewalls.	E-Safety, Data Security, Social Media, Online, Private, Personal, Data, Prevent Digital, Product, Video, Inform, Mood Board Planning, Assets, Store, Searching, Source, Copyright, Software.	Algorithms, Pseudo code, Flow charts, Sequence, Selection, Iteration, Loops, Arrays, Python, Programming, Techniques, Problem Solve, Variable, Constant, Program and Code.	Algorithms, Pseudo code, Flow charts, Sequence, Selection, Iteration, Loops, Arrays, Python, Programming, Techniques, Problem Solve, Variable, Constant, Program and Code.	Hardware, Central Processing Unit (CPU), Arithmetic Logic Unit (ALU), Control Unit (CU), Registers, PC (Program Counter), Memory Address Register (MAR), Memory Data Register (MDR), Cache Memory, Cores, Clock Speed, Fetch, Decode, Execute, Cycle, Embedded Systems, Functions, Process, Data, Instructions, Performance, Affect.	Language, Binary, Byte, Denary, Decimal, Hexadecimal, Hex, Number, Conversion, Character, Set, ASCII, Unicode.
Assessment 1		Practical project – Data Security Video (AO4 & AO5) and Extended writing piece – Planning documentation Mood Boards (AO4 & AO5)	AO1 and AO2 assessment – Algorithms (Flowchart/Pseudo code) Test (SA)	Practical project – Python coding project (AO3)	Practical project – Inside the CPU Theory (AO1, AO2 and AO3) and Extended writing piece – Investigating the factors that affect the performance of a computer system (AO1 & AO2)	AO1 and AO2 assessment - Hexadecimal conversion (SA)
Assessment 2	Practical project – Network Threats Theory (AO1 and AO2)	AP1 computing assessment focusing on Year 7 Curriculum knowledge and AUT1/AUT2 theory		AP2 computing assessment focusing on Year 7 Curriculum knowledge and AUT1/AUT2/SPR1 theory		AO1 and AO2 assessment - Characters (SA)

AP3 computing assessment focusing on AUT1/AUT2/SPR1/SPR2/SUM1 and SUM2 theory |
| **Extra-Curricular Offer** | Additional resources promoted – Seneca and BBC Bitesize for additional information. | Safer Internet Day. | Coding lunchtime club, iDEA and Cybersecurity programmes. | Coding lunchtime club, iDEA and Cybersecurity programmes. | Additional resources promoted – Seneca and BBC Bitesize for additional information. | Additional resources promoted – Seneca and BBC Bitesize for additional information. |
| **Time Allocation** | Autumn 1, 4 weeks, 1 lesson per week | Autumn 1 & Autumn 2, 8 weeks, 1 lesson per week | Spring 1, 6 weeks, 1 lesson per week | Spring 2, 6 weeks, 1 lesson per week | Summer 1, 4 weeks, 1 lesson per week | Summer 2, 4 weeks, 1 lesson per week |