Computing Year 9 Curriculum Map

Notre Dame Catholic College

YEAR 9	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Curriculum Content	**Unit 3 Internet and Communications – 3.1 Network Packet Switching and Protocols (Internet) link to KS3 Programme of Study.** **Composite = Understand how data is transmitted over network:** In year 7, year 8 and year 9 pupils have developed an understanding of computer hardware and network hardware. Pupils also learnt about the language computer devices use to communicate (binary) and developed skills to convert between three number systems, characters, images and sound too. In year 7 and year 8 pupils developed an understanding of how computer devices communication with each other (networks) and learnt about network threats and solutions to these threats too. This unit will explore how networks transfer data and how networks recognise what devices are connected. Pupils will also explore how websites are located on the internet too. **Component 3.1.1** Investigating Wired vs Wireless connections **Component 3.1.2** Understanding packets and packet switching **Component 3.1.3** Understanding protocols - network addressing **Component 3.1.4** Investigating the internet – Domain names	**Unit 3 Internet and Communications – 3.2 E-Safety Social Media & Radicalisation (Communications) link to KS3 Programme of Study.** **Composite = Understand the effects of inappropriate use of social media and develop a media product using a range of IT skills:** In year 7, year 8 and year 9 pupils have developed an understanding of computer hardware and network hardware. Pupils have learnt about the language computer devices use to communicate (binary) and developed skills to convert between three number systems, characters, images and sound too. Pupils have also developed an understanding of how computer devices communication with each other (networks), learnt about network threats and solutions, how networks transfer data and how networks recognise what devices are connected. Pupils also explored how websites are located on the internet too. Continuing on from year 7 and year 8 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 social media and radicalisation. **Component 3.2.1** Social media and requirements (Interactive multimedia presentation) **Component 3.2.2** Social media and planning -mind maps/mood boards (Interactive multimedia presentation) **Component 3.2.3** Social media and collecting assets (Assets table) **Component 3.2.4** Social media and interactive multimedia design (presentation software) **Component 3.2.5** Social media and advanced interactive multimedia design (presentation software)	**Unit 4: Algorithms & Programming: Algorithms & Coding – Advanced 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 three years pupils have learnt about the hardware needed for a computer device to function, Pupils have learnt about the language computer devices use to communicate (binary) and developed skills to convert between three number systems, characters, images and sound too. Pupils have also developed an understanding of how computer devices communication with each other (networks), learnt about network threats and solutions, how networks transfer data and how networks recognise what devices are connected. Pupils also explored how websites are located on the internet too. In the last unit pupils continued to develop their IT skills by creating a digital product about a current e-safety issue. In this unit pupil's will continue to learn to develop their programming skills by developing algorithms for (write to & read from files and functions/procedures). Pupils will also continue to learn to develop their programming skills by developing algorithms for (read/write & functions/procedures). Pupil will further develop their coding skills using Python coding software to create programs. **Component 4.1** Creating algorithms – Pseudo code (Read/Write to file) **Component 4.2** Creating algorithms – Pseudo code (Functions & Procedures) **Component 4.3** Developing programming techniques – coding advanced programs (Read/Write to file) in Python	**Unit 4: Algorithms & Programming: Algorithms & Coding – Advanced 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 three years pupils have learnt about the hardware needed for a computer device to function, Pupils have learnt about the language computer devices use to communicate (binary) and developed skills to convert between three number systems, characters, images and sound too. Pupils have also developed an understanding of how computer devices communication with each other (networks), learnt about network threats and solutions, how networks transfer data and how networks recognise what devices are connected. Pupils also explored how websites are located on the internet too. In the last unit pupils continued to develop their IT skills by creating a digital product about a current e-safety issue. In this unit pupil's will continue to learn to develop their programming skills by developing algorithms for (write to & read from files and functions/procedures). Pupils will also continue to learn to develop their programming skills by developing algorithms for (read/write & functions/procedures). Pupil will further develop their coding skills using Python coding software to create programs. **Component 4.4** Developing programming techniques – coding advanced programs (Functions & Procedures) in Python **Component 4.5** Creating a programming project in Python	**Unit 1 Computers – Network Hardware link to KS3 Programme of Study.** **Composite = Understand how computer devices communicate with each other (networks) and how this hardware functions:** In Year 9 pupil's will continue their computing journey by studying the four strands explored in Year 7 and Year 8 by developing an understanding of these themes in greater depth. In Year 7 you explored the different types of hardware that is needed for computing devices to function (work). In year 8 you further explored the CPU (Central Processing Unit) and how it processed data and instructions. This unit will investigate the hardware needed for computing devices to be able to communicate with each other. **Component 1.1** Investigate network hardware **Component 1.1** Investigate network hardware **Component 1.2** Investigate transmission media **Component 1.3** Understand Client server vs Peer to Peer models **Component 1.4** Investigate Internet hardware **Component 1.5** Investigating networks in practice	**Unit 2 Data – Data Representation Images, Compression and Sound link to KS3 Programme of Study.** **Composite = Understand how devices understand inputted data (Images and Sound):** In year 7, year 8 and year 9 pupils have developed an understanding of computer hardware and network hardware. Pupils also learnt about the language computer devices use to communicate (binary) and developed skills to convert between three number systems, characters, images and sound too. In year 7 and year 8 pupils developed an understanding of how computer devices communication with each other (networks) and learnt about network threats and solutions to these threats too. This unit will explore how networks transfer data and how networks recognise what devices are connected. Pupils will also explore how websites are located on the internet too. **Component 2.1** Investigate images (bit depth) **Component 2.2** Investigate images (resolution) **Component 2.3** Understand compression (Lossy vs Lossless) **Component 2.4** Investigate sound (frequency) **Component 2.5** Investigate sound (bit rate)

Prior knowledge and skills (from previous year / key stage)	Pupils will have knowledge of how networks function. Pupils will also have some knowledge of network/computer system threats and how they can be prevented. Some pupils may have a limited understanding of how data is transmitted on a network. Students will have no knowledge of packet switching, protocols and domain names.	Pupils will have some awareness of inappropriate use of social media. Pupils may have prior IT application skills i.e. inputting text, inserting images etc. Pupils will have knowledge of client requirements and planning documents such as visualisation diagrams and mood boards. Pupils will have some prior knowledge of storyboards and the Copyright Law. Pupils may have no knowledge of current social media issues such as radicalisation	Pupils should have an understanding of algorithms and constructs. Pupils should know some constructs i.e. sequence and selection and flowcharts. Pupil will have prior knowledge of pseudo code.	Pupils may have skills in creating programs using a text based coding language. Pupils will have no prior knowledge of the use of procedure & function and read/write to files.	Pupils will have knowledge of computer hardware and how it functions. Pupil will have some prior knowledge of networks i.e. network types and layouts and some network hardware such as routers, but will have limited knowledge of other network hardware components and how they function together. Pupils will have no knowledge of transmission media (ethernet) or network models (client-server and peer to peer).	Pupils will recognise digital images and sound but will have limited knowledge of how these items are stored on a computer system. Pupils will have limited knowledge of compression theory too.
Core Knowledge Organiser content	Network data packet switching and protocols. Internet domain names.	E-Safety issues inappropriate use of social media, use of planning documentation storyboards and sourcing assets appropriately.	Fundamentals of algorithms with the use of flowcharts and pseudo code, programming techniques with the use of variables/constants and constructs (sequence, selection, iteration, read/write files, functions & procedures).	Fundamentals of algorithms with the use of flowcharts and pseudo code, programming techniques with the use of variables/constants and constructs (sequence, selection, iteration, read/write files, functions & procedures).	Function of network hardware components such as: NIC (Network Interface Controller), WAP (Wireless Access Point), Router and Switch. Function of Internet hardware such as: Clients, ISPs (Internet Service Providers) and Servers. How networks function in practice. Function of transmission media, network models and internet hardware.	Digital images and digital sound and how they are stored on a computer system. How compression reduces file sizes.
Vocabulary / Key Subject Terminology	Networks, Packets, Packet Switching, Data, Router, Protocols, Rules, TCP (Transmission Control Protocol), IP (Internet Protocol), HTTP (Hyper Text Transfer Protocol), FTP (File Transfer Protocol), IMAP (Internet Message Access Protocol), SMTP (Simple Mail Transfer Protocol), Internet, Domain Name, URL.	E-Safety, Inappropriate, Social Media, Online, Private, Personal, Data, Prevent Digital, Radicalisation, Trolling, Prosecution, Legal, Bullying, Sexting, Trace Product, Presentation, Interactive, Multimedia, Inform, Storyboard, Planning, Assets, Store, Searching, Source, Copyright, Software.	Algorithms, Pseudo code, Flow charts, Sequence, Selection, Iteration, Loops, Files, Procedures, Functions, Python, Programming, Techniques, Problem Solve, Variable, Constant, Program and Code.	Algorithms, Pseudo code, Flow charts, Sequence, Selection, Iteration, Loops, Files, Procedures, Functions, Python, Programming, Techniques, Problem Solve, Variable, Constant, Program and Code.	Networks, Hardware, Network Interface Controller (NIC), Wireless Access Point (WAP), Switch, Router, Registers, Internet, Internet Service Provider (ISP), Client, Server, Functions, Data, Transmission Media, Ethernet, Fibre Optic, Copper, Wire, Model, Client Server, Central, Peer to Peer, Shared.	Digital, Image, Pixel, Colour Depth, Resolution, Binary, Bit, Power, Compression, Reduce, File, Size, Lossy, Lossless, Sound, Analogue, Sampling, Frequency, Waves, Rate.
Assessment 1	Practical project – Network Packet Switching and Protocols Theory (AO1 and AO2)	Practical project – Inappropriate Use of Social Media Interactive Presentation (AO4 & AO5) and Extended writing piece – Planning documentation Storyboards (AO4 & AO5)	AO1 and AO2 assessment – Algorithms (Flowchart/Pseudo code) Test (SA)	Practical project – Python Advanced coding project (AO3)		AO1 and AO2 assessment – Images and Compression (SA)
Assessment 2		AP1 computing assessment focusing on Year 7/Year 8 curriculum knowledge and AUT1/AUT2 theory		AP2 computing assessment focusing on Year 7/Year 8 curriculum knowledge and AUT1/AUT2/SPR1 theory	Practical project – Network Hardware Theory (AO1, AO2 and AO3) and Extended writing piece – Investigating network in practice (AO1 & AO2)	AO1 and AO2 assessment – Sound (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, 5 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, 6 weeks, 1 lesson per week	Summer 2, 6 weeks, 1 lesson per week