KS3 Computing Curriculum Plan 2014-15

Students follow the plan detailed below, developing their skills, understanding and knowledge of computing. All groups have 2 lessons a fortnight.

Year 7	Content summary
Under the Hood of a computer	Students look at the main components of computers and break these down into input, processing and output devices. Using their ELA, they identify each component and explain what its role is within the computer system. Students look at how computers communicate using only 1s and 0s and convert between binary and denary number systems.
Think like a computer scientist	Students break down tasks and use pattern identification to solve problems. Students identify the steps needed to solve non-computer based problems. They apply their understanding with algorithms and spreadsheet modelling to solve problems.
Creating an animation	Students create an animation for a dance routine and link pattern identification with algorithms from the previous unit. Students look at sequences of instructions, how procedures are used and how IF THEN statements can be used to create routines.
Web page creation	Students look at the programming side of creating web pages. They use CSS and HTML to create interactive pages with movies and images imbedded for Web 2.0 pages.
Designing for HCI	Students identify how humans interact with technology and how different devices such as mobile phones have changed the way we can enter and receive information. Students look at creating an interface using prototyping and iteration, to enable rapid development of a solution.
Programming a calculator	Students look at the inner workings of a calculator to understand the decision making processes that are undertaken. Students then use Scratch to create their own calculator where they use procedures and functions to carry out calculations.
Year 8	
Operating Systems	Students explain what an operating system is and the different types of operating systems that are available today. They look at hand held devices and compare the operating systems to computer systems.
Binary	Students build on their knowledge from Year 7 and convert between binary and decimal number systems. Students show how computer systems use binary for addition and overflows for larger numbers
Programming using selection statements and Boolean expressions	Students use 'IF Statements' and Boolean operators including AND and OR in programming. Students identify and use nested statements and the NOT Boolean operator in their programming.
Connecting to the Internet	Students identify the hardware components required to access the internet. They look at different technologies available and the role of networks in communication of computer systems.
Sorted!	Students identify the different algorithms used when sorting data in computer systems. Students use Bubble Sort, Selection Sort and the compare sorting algorithms to find the best solution to a given problem.
How to make a computer appear smart	Students identify if computers are smart and if so what makes them smart. Students analyse the different programming techniques that are used to solve problems and then conclude whether computers are actually smart.

In Year 9 students can opt for the Computer Science course or the iMedia course. In Computer Science, students will build on their computing knowledge and look in-depth at programming using SmallBasic.

For the iMedia course, students will follow an interactive course aimed at developing their skills in graphics and creating professional web pages. Part of the course will build on fundamental Digital Literacy skills which will allow students to use professional packages appropriately and to enhance their work.

Year 9 Computer Science	
Introduction to programming	Students are introduced to SmallBasic which will be used throughout the programming course. Students recap basic programming concepts including statements, properties and operations. This is followed by variables, conditions, loops and sub routines.
Graphics in programming	Students will use graphics in their programs. Using their knowledge from the introduction unit, they will develop programs that will utilise shapes, sound and text objects.
Files	Students will start to use more complex methods of accessing data. This includes using files to store and retrieve data with stacks and arrays to be used within programs.
Interactivity – 1	Building on their knowledge, students develop interactivity in their programs. Using events and controlling objects, they are able to make their programs realistic.
Debugging	All programmers make mistakes in their code which can be either logic or syntax. Debugging is an important method of finding and resolving programming errors and students use different methods to identify and rectify errors in their programs.
Interactivity – 2	Following on from the basic interactivity, students develop their skills with shapes and events in a program. These are then used for collision detection which is used in the majority of 'shoot-em-up' games.

Year 9	
iMedia	Introduction to the course and the importance of Audience and Purpose when creating media for a client. Identifying and explaining client requirements for media.
Graphics	Building on the theme of audience and purpose, students analyse the requirements of their audience, purpose and client. Students then design and create a graphic image to meet the identified needs. They learn to use industry-standard graphics packages to produce professional images.
Photography	Students use their cameras / mobile phones to understand different shot types. They utilise their knowledge to create professional images to meet the needs of their client.
Web page development	Building on their knowledge of the internet, students look at Web 2.0 and how interactive web sites are. They create professional web pages to meet the needs of their target audience.
Digital Literacy	
Internet	Students develop their research skills by identifying appropriate web sites to be used. They develop skills in identifying bias and authenticity in web sites and how to acknowledge internet resources in their work.
E-Safety	Students use the internet to identify the dangers that this technology poses. They identify what constitutes as cyber bullying and use different methods of remaining safe on the internet.
Standard Operating Procedure when using software packages	Students use different software programs in a professional manner. Reports are created with headers and footers with all relevant information in the correct areas. Notes are used for slideshow presentations to enable the audience to listen to the speaker and spreadsheets are used to create professional graphs.
Referencing	Students produce documents with correct referencing of information sources that they have used. Professional documents are produced with cover pages, contents and a bibliography.