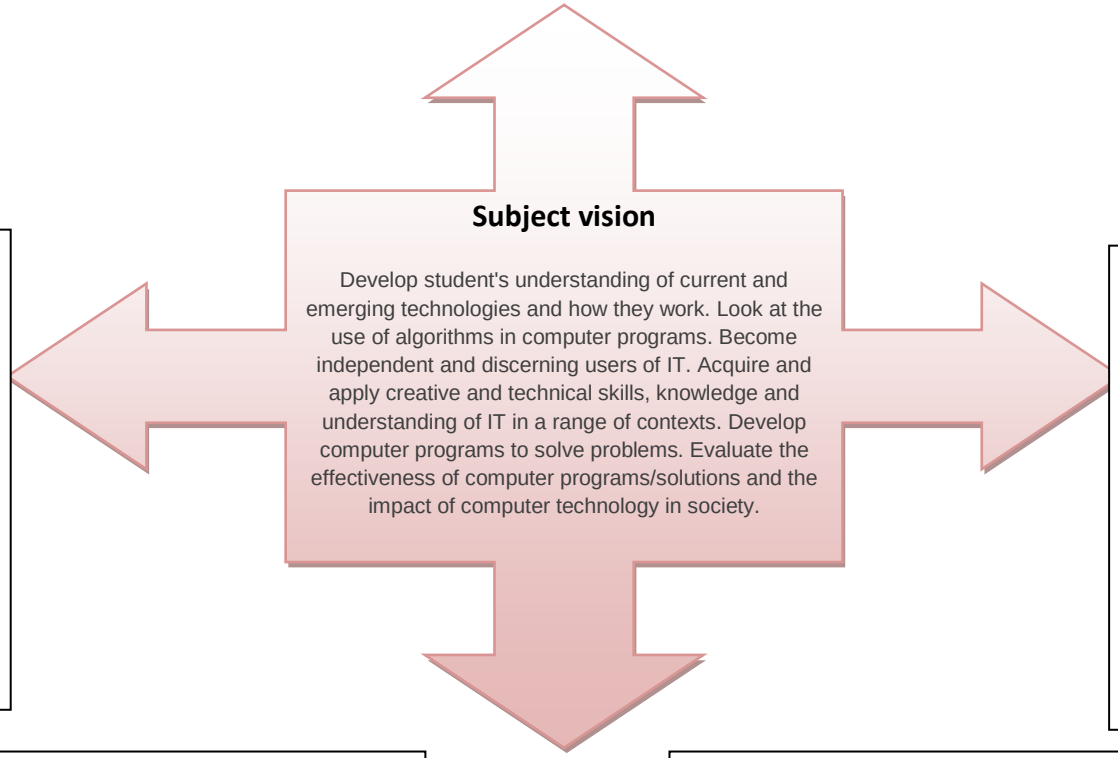
Programme of Learning – Computing

	Year 7	Year 8	Year 9	Year 10	Year 11	Post 16
Knowledge & Understanding	Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems Understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem Use two or more programming languages: • Scratch - Graphical • Python - Textual to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions Understand simple Boolean logic for example: • AND • OR • NOT and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal]	Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems Understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits Undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users Create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online	**Cambridge Nationals** Understanding of systems used at home, school and in a business setting. Students will also consider the implications of working with data to create content within a commercial environment. The content includes: • An understanding of how ICT can be used to meet business needs • How to work with information and data to meet specific business needs • How ICT can be used to support business working practices • An understanding of the legal, ethical, safety and security issues that affect how computers should be used. **GCSE Computing** Develop their capability, creativity and knowledge in computer science, digital media and information technology	**Cambridge Nationals** Students will use a wide range of applications that are commonly used in the workplace and in further and higher education. They will develop an understanding of how to select the most appropriate software and to use tools to meet specific business requirements while developing skills to enhance documents of a variety of file types. They will also learn techniques to search for, select and store information in a variety of contexts and how to select the tools and techniques to communicate information and solve problems. The content will give students the skills to: • Use techniques to search for, store and share information • Select and use software to handle data • Select and use software to communicate information	**Cambridge Nationals** Process and present data into meaningful information that can be used to support the decision-making process in real-life scenarios, including budgeting, cost modelling, reporting, trend analysis and forecasting. The content will provide students with the skills to: • Create/design and populate spreadsheets to meet user requirements • Select and use spreadsheet functions to meet user requirements • Use spreadsheet models to present information to support decision-making. **GCSE Computing** Develop understanding of current and emerging technologies, understanding of how they work and apply this knowledge and understanding in a range of contexts Continue to acquire and apply a knowledge, some technical skills and an understanding of the use of	The aims of this course are to encourage candidates to develop: • the capacity to think creatively, innovatively, analytically, logically and critically; • an understanding of the organisation of computer systems, including software, hardware, data, communications and people; • the ability to apply skills, knowledge and understanding of computing, including programming, in a range of contexts to solve problems; • skills in project and time management; • the capacity to see relationships between different aspects of the subject, and perceive their field of study in a broader perspective; • an understanding of the consequences of using computers, including social, legal, ethical and other issues; • an awareness of emerging

	Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct and know how to report concerns.	identity and privacy; recognise inappropriate content, contact and conduct and know how to report concerns.	Develop and apply their analytic, problem-solving, design, and computational thinking skills Understand how changes in technology affect safety, including new ways to protect their online privacy and identity, and how to identify and report a range of concerns.	for a business purpose • Use software tools to format documents. **GCSE Computing** Controlled Assessment Students will complete two sets of Controlled Assessment involving designing, creating and testing a computing solution towards a real life situation. The students will be required to use mutiple programming languages to solve a set of complex problems.	algorithms in computer programs to solve problems using programming Use their knowledge and understanding of computer technology to become independent and discerning users of IT, able to make informed decisions about the use and be aware of the implications of different technologies Acquire and apply creative and technical skills, knowledge and understanding of IT in a range of contexts	technologies and an appreciation of their potential impact on society.
Skills & Application	Students will develop their computing skills. **Programming** Graphical programming using Scratch Text based programming using Python **E-Safety** E-Safety awareness project including online risks and cyberbullying **Computational Abstractions** Use of Flowol to represent and solve real-life problems using Flowcharts and animations **Algorithms** Understand and use algorithms for searching and sorting to	**PC Hardware** Understanding of components including how they connect together and how data is handled by the computer **Graphical Manipulation** Understanding of how images, text and sound are represented digitally by the computer, creation of ASCII art and manipulating images **Problem solving project** Students will attempt to solve a real life problem using multiple device types involving handling data and displaying outputs in different formats	Use of office applications such as Word, Excel, PowerPoint Computing students to study HTML, CSS, JavaScript Learn how to develop programs from Graphical to Textual code	**Algorithms** Students will be able to design and create algorithms using Flowcharts and Pseudo code. **Coding skills** Students will learn and develop their skills in using Python, JavaScript and HTML **Logic reasoning** Students should be able to understand and develop logic reasoning for their programming tasks.	Understand the importance of ethical, environmental and legal considerations when creating computer systems. Explain how common characteristics of CPUs Be able to show understanding of Binary Logic Understand Boolean Logic and create diagrams Demonstrate deeper understanding of inner workings of computers	• Indepth understanding of Hardware and Software • Understand Data: its presentation, structure and management • Data transmission and networking • Systems development life cycle • Characteristics of information systems • Implications of computer use • Designing solutions to problems • The structure of procedural programs • Data types and data structures • Common facilities of procedural languages • Writing maintainable

	solve real-life problems	**E-Safety** E-Safety awareness project including online risks, cyberbullying, digital responsibilities and cybercrime				programs • Testing and running a solution



Student Support & Development

Staff team & their skills

Inclusion

Extra-curricular opportunities, trips & visits

Independent learning - expectations

Progression

(Post 16, careers)

Assessment & Monitoring of Progress

Approaches to summative & ongoing teacher assessment, practical outcomes, strategies to meet individual needs

Development of Subject Specific language

Literacy

SPAG