**Subject Year Curriculum Overview – A Level Computer Science (Year 2)**

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|  | **Autumn**  | **Spring**  | **Summer** |
|  | **Learning Cycle 1** | **Learning Cycle 2** | **Learning Cycle 3** | **Learning Cycle 4** | **Learning Cycle 5** | **Learning Cycle 6** |
| **Topic**  | **Theory:**1.4.3 Boolean Algebra2.1.1 Thinking abstractly2.1.2 Thinking ahead**Practical:** NEA project | **Theory:**2.1.3 Thinking procedurally2.1.4 Thinking logically2.1.5 Thinking concurrently**Practical:** NEA project | **Theory:**2.2.1 Programming techniques2.2.2 Computational methods2.3.1 Algorithms**Practical:** NEA project | **Theory:**1.5.1 Computing related legislation | **Theory:**1.5.2 Moral and ethical issues | Revisit of topics |
| **Critical Prior Knowledge**  | Computational thinking and logic gates | Identify the components of a problem. | Programming constructs: sequence, iteration, branching. | That there are a variety of laws relating to computing. | What morals and ethics are? | Overview from each topic |
| **Overall Intent****(Big ideas and key concepts)** | How abstraction can be used to help solve a problem.That computers are made of digital circuits. | Understand the benefits of applying computational thinking to solving a wide variety of problems | How computers can be used to solve problems and programs can be written to solve them. | What the role of the different laws are and the part they play within society. | The individual moral, social, ethical and cultural opportunities and risks of digital technology | Review the links between each of the topics. |
| **Essential****Knowledge milestones** **(What students must master)** | The different logic gates and associated truth tables.Boolean laws and identities.  | Determine the order of the steps needed to solve a problem.Determine the parts of a problem that can be tackled at the same time. | Use of an IDE to develop/debug a program. | (a) The Data Protection Act 1998. (b) The Computer Misuse Act 1990. (c) The Copyright Design and Patents Act 1988. (d) The Regulation of Investigatory Powers Act 2000. | How the topic effects the following:Computers in the workforce.Censorship and the Internet. Piracy and offensive communications. | Developing knowledge and application. |
| **Cultural Capital** | Many real-world objects and situations are represented in computer systems. Using abstraction correctly will help identify and remove the unnecessary detail to solve a problem. | Links to programming project and other options for ways of thinking within solving any problem. | How these techniques have been used to make programs and solve problems | How these laws fit into society. Real case studies | Case studies of real effects within the world. | How what they know relates to many areas outside of the subject. |
| **Assessment Points**  | Problem solving using abstraction. | Using the techniques outline to solve a variety of different problems. Programming project. | Using the techniques outline to solve a variety of different problems. Programming project | Quizzes and essay based questions.  | Quizzes and essay based questions.  | Quizzes and exam based questions. |
| **ECC Student Characteristics** | H&S = Healthy and safe **R =** **Resilient learners including activities beyond the classroom** **Car = Careers and aspirations** R&B = Respect and good behaviours **CCS = Confidence and communication skills (including literacy, numeracy, extended writing, reading and listening** CED = Mutual tolerance and awareness of cultures, equality and diversity  | H&S = Healthy and safe R = **Resilient learners including activities beyond the classroom** **Car = Careers and aspirations** R&B = Respect and good behaviours **CCS = Confidence and communication skills (including literacy, numeracy, extended writing, reading and listening** CED = Mutual tolerance and awareness of cultures, equality and diversity  | H&S = Healthy and safe R = **Resilient learners including activities beyond the classroom** **Car = Careers and aspirations** R&B = Respect and good behaviours **CCS = Confidence and communication skills (including literacy, numeracy, extended writing, reading and listening** CED = Mutual tolerance and awareness of cultures, equality and diversity  | H&S = **Healthy and safe** R = **Resilient learners including activities beyond the classroom** **Car = Careers and aspirations** **R&B = Respect and good behaviours** **CCS = Confidence and communication skills (including literacy, numeracy, extended writing, reading and listening** **CED = Mutual tolerance and awareness of cultures, equality and diversity**  | **H&S = Healthy and safe** **R = Resilient learners including activities beyond the classroom** **Car = Careers and aspirations** **R&B = Respect and good behaviours** **CCS = Confidence and communication skills (including literacy, numeracy, extended writing, reading and listening** **CED = Mutual tolerance and awareness of cultures, equality and diversity**  | H&S = Healthy and safe R = **Resilient learners including activities beyond the classroom** **Car = Careers and aspirations** R&B = Respect and good behaviours **CCS = Confidence and communication skills (including literacy, numeracy, extended writing, reading and listening** **CED = Mutual tolerance and awareness of cultures, equality and diversity**  |
| **Connection to future learning****(When is this developed / revisited)?** | Application to programming project | Application to programming project and the different ways of thinking to solve problems. | Application to all areas within the programming project and the different aspects of programming within the future cycles. | Linked to learning cycle 5 and revisited. | Links to cycle 6. |  |