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| **Year 11 Term 2 – Term 5**  **GCSE Computer Science** | Our mission is to stimulate and challenge our students to excel and provide a desire for lifelong learning and pursue careers in the world of Business, Computing, and ICT. | | | | | |
| **Enquiry Questions: Can you reverse engineer machine code to any high level language?** | | | | | | |
| **Component 2: Computational Thinking, Algorithms & Programming**  Students understand and apply the fundamental principles and concepts of Computer Science, including abstraction, decomposition, logic, algorithms, and data representation. They will also analyse problems in computational terms through practical experience of solving such problems, including designing, writing and debugging programs thinking creatively, innovatively, analytically, logically and critically. Further more students will apply mathematical skills relevant to Computer Science. | | | | | | |
| **Knowledge**  Students will know about… | **Application/Skills**  Students will be able to… | **Vocabulary** | **Home Learning** | **Assessment** | **Extra Resources**  **Extended Reading** | **Cultural Capital** |
| **2.2.1 Programming**  Students will be using a high level programming language (Python) to create working programs to solve/model real problems. Their skill will include the following:   * **Sequence & Variables & Data Types** * **Selection** * **Iteration** * **Arrays** * **String Manipulation & Random Numbers** * **File Manipulation** * **Functions & Procedures**   **Non Exam Assessment on the Card Game/Dice Game**  All students will be given the opportunity to undertake a programming task(s), either to a specification or to solve a problem (or problems), during their course of study. Students may draw on some of the content in both components when engaged in Practical Programming  **Exam Techniques Paper 01**  **•Computer Architecture, CPU performance, Embedded Systems**  **•Primary & Secondary Storage**  **•File Conversion, Unit Conversion (BIN, DEN & HEX)**  **•Images, Sound, Compression**  **•Networks Hardware, LAN vs WAN, Topologies and Roles of Networks**  **•Layers and Protocols**  **•Network Threats, Preventions and ethics**  **Exam Techniques Paper 02**  **•Computational Thinking, Searching, Sorting Algorithms**  **•Flowcharts & Pseudocode**  **•Pseudocode ONLY**  **•Defensive Design, Testing**  **•Logic and Languages** | * Create working programs based on scenario * Use a range of skills in programming to create working solutions * Plan, Analyse, Design a report based on user requirements * Evaluate work and suggest improvements the solution | * Sequence * Selection * Iteration * Variables * Input/Output * Arrays * Libraries * Packages * Indentation * Encapsulation * Casting * Data Type * String * Integer * Real * Boolean * Comments * Subroutine * Procedure * Function * Integration | High quality Homework set on Google Classrooms  Teach-ICT.com  PG Online – GCSE Computer Science | Practice Exam Papers  PPE2 & PPE3 Exams  Controlled Assessment of Coursework | [Teach-ICT.com](https://teach-ict.com/2016/GCSE_Computing/OCR_J277/OCR_J277_home.html)  [Isaac Computer Science](https://isaaccomputerscience.org/topics/gcse?examBoard=all&stage=all#all)  Seneca – [Computer Science](https://app.senecalearning.com/classroom/course/a1ce4570-6e27-11e8-af4b-35cf52f905c2/section/65ac2e24-3b57-4598-b4dc-01e04eddee1b/session)  BBC Bitesize  CGP – GCSE Computer Science  Hodder Education – Revision Book A Level Computer Science | The National Science Museum (free events)  <https://www.sciencemuseum.org.uk/>  The Royal Institute of Science (free events)  <https://www.rigb.org/families/family-fun-days>  **National Museum of Computing, Bletchley Park (Near Milton Keynes)**  <http://www.tnmoc.org/>    <https://www.bletchleypark.org.uk/>  <http://www.codesandciphers.org.uk/bletchleypark/>  (virtual tour)    Centre for Computing History, Cambridge  <http://www.computinghistory.org.uk/> |