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| **Year 11 Term 4**  **A Level 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: To what extent do computers fully replace sectors in employment? What are the implications when AI creates its ‘own’ software? How does the router know when to start converting binary into other data forms?** | | | | | | |
| |  | | --- | | **Component 01: Computer Systems**  This component will introduce learners to the internal workings of the Central Processing Unit (CPU), the exchange of data and will also look at software development, data types and legal and ethical issues. It is expected that learners will draw on this underpinning content when studying computational thinking, developing programming techniques and devising their own programming approach in the Programming project component (03 or 04). Learners will be expected to apply the criteria below in different contexts including current and future uses of the technologies. | | | | | | | |
| **Knowledge**  Students will know about… | **Application/Skills**  Students will be able to… | **Vocabulary** | **Home Learning** | **Assessment** | **Extra Resources**  **Extended Reading** | **Cultural Capital** |
| **1.5 Legal, moral, cultural and ethical issues**  Learning about the laws of computing and how data should be handled. Discussing the impact of technologies in the real world and how it affects daily life.  **1.3.2 Databases**  Understand how to create entities to construct databases and query the database to filter records of data.  **1.3.3 Network Characteristics**  Learn how networks transmit data and the models/hardware used to create an effective network.  **1.3.4 Web Technologies**  Understand the nature of websites and the internet and learning a scripting language in HTML and CSS to design responsive websites. | * Practice programming concepts using arrays, queues and stacks to create abstract data types. * Creating and modifying a database via SQL * Drawing network models for given scenarios * Comparing types of networks and identifying suitable hardware, topologies for a given context * Write HTML and CSS scripts for webpage design * Implement compression using python * Integrate SQLite package in python. | * Computer Misuse Act * Data Protection Act * Copyright, Designs and Patents Act * Freedom of Information Act * Artificial Intelligence * Automated Decision Making * Censorship and the internet * Computers in the workforce * Databases * Normalisation * Structured Query Language * Transaction Processing * Networks * Models and Protocol Layering * The TCP/IP stack * Internet Protocols * IP Addressing * LANs, WANs, PANs, SANs, MANS * Packet & Circuit Switching * Network configuration * Network Security * Web Technologies * Compression * Web Search * Client & Server processing * HTML/CSS | High quality Homework set on Google Classrooms  Teach-ICT.com  PG Online – ClearRevise A Level Computer Science | End of unit assessments via Socrative  In-class mock exams | [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  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/> |