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| **Year 13 Term 1**  **A Level Computer Science** | In the field of Computing, our goal is to foster creativity and problem-solving skills in students, enhancing their comprehension and practical application of fundamental concepts in Computer Science and Information Technology (IT). Our aim is to empower students to critically analyse computational issues and devise innovative solutions through the process of designing, writing, developing, and assessing digital solutions | | | | | |
| **Enquiry Questions: To what extent is a problem too complex when creating a program?** | | | | | | |
| |  | | --- | | **Component 03: Computer Science Programming Project - Analysis**  Students will have the opportunity to demonstrate their programming skills in creating their own programming project. Learners will be expected to analyse, design, develop, test, evaluate and document a program written in Python. The underlying approach to the project is to apply the principles of computational thinking to a practical coding problem. Learners are expected to apply appropriate principles from an agile development approach to the project development. | | | | | | | |
| **Knowledge**  Students will know … | **Application/Skills**  Students will be able to… | **Vocabulary** | **Home Learning** | **Assessment** | **Extra Resources**  **Extended Reading** | **Cultural Capital** |
| * How to devise a computational problem and apply the stages of analysis to the problem. * Students are expected to include background research for existing solutions and specify a proposed solution through a computational approach for their proposed problem. * Student will need to conduct interviews and surveys to support their research to help develop a robust solution * The project will have limitations in which students must use their fair judgment and decide a time frame for their project * Students must know how to implement a success criteria in order to monitor their progress | * Describe and justify the features that make the problem solvable by computational methods. * Explain why the problem is amenable to a computational approach. * Identify and describe those who will have an interest in the solution explaining how the solution is appropriate to their needs (this may be named individuals, groups or persona that describes the target end user). * Research the problem and solutions to similar problems to identify and justify suitable approaches to a solution. * Describe the essential features of a computational solution explaining these choices. * Explain the limitations of the proposed solution. * Specify and justify the solution requirements * including hardware and software configuration (if appropriate). * Identify and justify measurable success criteria for the proposed solution. | * Abstraction * Decomposition * Computational Thinking * Success Criteria * Flowcharts * Pseudocode * Algorithm * Data Structure * Sequence * Selection * Iteration * Subroutine * Libraries * Packages * Variables * Data Types * Testing * Evaluation * Input Validation * Object Oriented Programming * Prototyping * Version Control * Polymorphism * Instantiation * Inheritance * Class Diagram | Teach-ICT.com  PG Online – ClearRevise A Level Computer Science  Isaac Computer Science | Controlled Assessment  Students are expected to complete this independently with guided learning. | [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  PG Online - AS and A Level Computer Science  Craig ‘N’ Dave | 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/> |