Year 11 Curriculum Overview

Rationale: The Year 11 curriculum is designed to re-introduce students to topics for prior learning and recall with the overriding aim of preparing them for their final examinations. Students will revisit Year 9 and Year 10 topics including storage, data representation, networks, system security, operating systems, ethical, legal and cultural concerns, robust program design, Boolean logic and translators. Students will also be given the opportunity to continue to undertake a range of programming tasks that will allow them to develop their skills in interpreting algorithms with the aim to design, write, test and refine programs using a high-level programming language.

Term/Length of Time	Outline	Assessment/Teacher Feedback Opportunities	Homework and Literacy resources
Autumn 1	**Recap on Storage and Networks** Students will revisit and develop their understanding of the different units of data storage, how data needs to be converted into a binary format to be processed by a computer, data capacity, calculation of data capacity requirements, conversion of denary numbers into binary and hexadecimal. In addition students will investigate further how binary is used to represent characters, sound and images and also look at different compression techniques. Following this topic students will revisit different types of networks, the factors that affect the performance of networks, the hardware needed to connect stand-alone computers into a Local Area Network, different types of transmission media, the Internet, network topologies,	A series of knowledge based questions completed as part of classwork. Formal end of topic assessments that include a mixture of open and closed questions with an additional focus on keywords/literacy. Completion of a set of Cornell Notes on network security and system software. A selection of programming challenges completed in class to assess understanding of programming techniques.	**Minimum homework expectation - to be set on G4S** Completion of three (two theory + one programming) 30-minute revision/recall activities using an online platform called Smart Revise which is bespoke for OCR GCSE Computer Science. **Optional homework tasks and Literacy resources** Creation of revision resource (e.g. mind map) to be submitted alongside compulsory activity Access BBC Bitesize and research more into Number Systems plus Network topics here and here Complete lessons 1 through to 9 on Number Systems pus lessons 1 through to 6 on Networks from Oak National Academy Develop your coding and work through some interactive python lessons/challenges from LGfL or Python Principles Work through one or more challenges from 'An Algorithm A Day' to improve your ability to interpret written problems and write coded solutions read for the examination. Complete some 'Advance' questions using your Smart Revise platform login.

	modes of connection, encryption, IP addressing, MAC addressing, common protocols and the concept of layers. **Written Examination Question Technique - Programming** Students start to improve their ability to answer programming questions on String Manipulation and File Handling.		Watch an episode of BBC Click on the BBC iPlayer Additional Reading for Budding Computer Scientists: Choose a book from this recommended reading list some of which you may find in the department or the library Choose another computing language to learn from W3Schools
Autumn 2	**Recap on Network Security and System Software** Students will revisit and develop their understanding of different threats to computer systems and networks and underpin their key knowledge/principles of each form of attack including how the attack is used and the purpose of the attack. This will be supported further by understanding how to limit the threats posed and the various methods to remove vulnerabilities. Following this students will look back on and deepen their understanding and knowledge of the purpose and functionality of operating systems including user interface, memory management and multitasking, peripheral	A series of knowledge based questions completed as part of classwork. Formal end of topic assessments that include a mixture of open and closed questions with an additional focus on keywords/literacy and how to approach the longer high mark questions. Completion of a set of Cornell Notes on wider issues surrounding computer science. A selection of programming challenges completed in class to assess understanding of programming techniques.	**Minimum homework expectation - to be set on G4S** Completion of three (one theory + two programming) 30-minute revision/recall activities using an online platform called Smart Revise which is bespoke for OCR GCSE Computer Science. **Optional homework tasks and Literacy resources** Creation of revision resource (e.g. mind map) to be submitted alongside compulsory activity Access BBC Bitesize and research more into Network Security and System Software topics Complete lessons 1 through to 7 on Network Security and lesson 1 on System Software from the Oak National Academy Develop your coding and work through some interactive python lessons/challenges from LGfL or Python Principles Work through one or more challenges from 'An Algorithm A Day' to improve your ability to interpret written problems and write coded solutions read for the examination.

	management and drivers, user management and file management. This will lead into the purpose and functionality of utility software including encryption software, defragmentation and data compression. **Written Examination Question Technique - Programming** Students start to improve their ability to answer programming questions on 1D and 2D Arrays.	Mock examinations will take place for a more formal assessment setting.	Complete some 'Advance' questions using your Smart Revise platform login. Watch an episode of BBC Click on the BBC iPlayer Additional Reading for Budding Computer Scientists: Choose a book from this recommended reading list some of which you may find in the department or the library Choose another computing language to learn from W3Schools
Spring 1	**Recap on Wider Issues Surrounding Computer Science** Students will revisit and develop their understanding of the impacts of digital technology on wider society including ethical, legal, cultural, environmental and privacy issues. This will include how to approach and answer essay style questions in the examination. This unit will also link to our International Schools focus by investigating moral and	A series of knowledge based questions completed as part of classwork. Formal end of topic assessments that include a mixture of open and closed questions with an additional focus on keywords/literacy. Completion of a set of Cornell Notes on computational thinking and searching/sorting algorithms.	**Minimum homework expectation - to be set on G4S** Completion of three (two theory + one programming) 30-minute revision/recall activities using an online platform called Smart Revise which is bespoke for OCR GCSE Computer Science. **Optional homework tasks and Literacy resources** Creation of revision resource (e.g. mind map) to be submitted alongside compulsory activity Access BBC Bitesize and research more into the topics of Wider Computing Issues, Computational Thinking, Common Algorithms and Algorithm Production

	environmental issues surrounding develop and under developed countries. **Recap on Computational Thinking and Searching/Sorting Algorithms** Students will revisit and develop their understanding of the principles of abstraction, decomposition and algorithmic thinking, write or refine an algorithm using the techniques learnt, how to identify syntax/logic errors in code and suggest fixes and create and use trace tables to follow an algorithm. Students will also deepen their understanding of the standard searching algorithms (Binary and Linear) and the standard sorting algorithms (Bubble, Merge and Insertion). **Written Examination Question Technique - Programming** Students start to improve their ability to answer programming questions on Procedures.	A selection of programming challenges completed in class to assess understanding of programming techniques.	Complete lessons 1 through to 7 on Wider Computing Issues and lessons 1 through to 11 on Computational Thinking and from Oak National Academy Develop your coding and work through some interactive python lessons/challenges from LGfL or Python Principles Work through one or more challenges from 'An Algorithm A Day' to improve your ability to interpret written problems and write coded solutions read for the examination. Complete some 'Advance' questions using your Smart Revise platform login. Watch an episode of BBC Click on the BBC iPlayer Additional Reading for Budding Computer Scientists: Choose a book from this recommended reading list some of which you may find in the department or the library Choose another computing language to learn from W3Schools

Spring 2	**Recap on Defensive Programming Design** Students will revisit and develop their understanding of how to deal with invalid data in a program, authentication to confirm the identity of a user, input validation and an understanding of why commenting is useful. In addition students will look back at testing techniques. **Recap on Boolean Logic** Students will deepen their understanding and knowledge of simple logic diagrams and truth tables, They will use these skills to combine Boolean operators to create logic circuits. **Recap on Translators and IDE's** Students will revisit and develop their understanding of the characteristics and purpose of high-level and low-level languages and the role and purpose of translators, compilers and interpreters when executing programs. **Written Examination Question Technique - Programming**	A series of knowledge based questions completed as part of classwork. Formal end of topic assessments that include a mixture of open and closed questions with an additional focus on keywords/literacy. Completion of a set of Cornell Notes on defensive design and Boolean logic. A selection of programming challenges completed in class to assess understanding of programming techniques.	**Minimum homework expectation - to be set on G4S** Completion of three (two theory + one programming) 30-minute revision/recall activities using an online platform called Smart Revise which is bespoke for OCR GCSE Computer Science. **Optional homework tasks and Literacy resources** Creation of revision resource (e.g. mind map) to be submitted alongside compulsory activity Access BBC Bitesize and research more into Defensive Design, Boolean Logic and IDE's topics Complete lessons 9 and 10 on Boolean Logic from Oak National Academy plus lessons 1 through to 3 on SQL and lesson 1 on Translators Develop your coding and work through some interactive python lessons/challenges from LGfL or Python Principles Work through one or more challenges from 'An Algorithm A Day' to improve your ability to interpret written problems and write coded solutions read for the examination. Complete some 'Advance' questions using your Smart Revise platform login. Watch an episode of BBC Click on the BBC iPlayer Additional Reading for Budding Computer Scientists: Choose a book from this recommended reading list some of which you may find in the department or the library Choose another computing language to learn from W3Schools

	Students start to improve their ability to answer programming questions on Functions and Parameter Passing.		
Summer 1	**Exam Preparation** Students will complete a series of exam questions covering elements from Paper 1 and Paper 2 using a bespoke revision guide.	A series of knowledge based questions completed as part of classwork. Formal end of topic assessments that include a mixture of open and closed questions with an additional focus on keywords/literacy. Completion of a set of Cornell Notes on translators and IDE's. A selection of programming challenges completed in class to assess understanding of programming techniques.	**Minimum homework expectation - to be set on G4S** Completion of three 30-minute revision/recall activities using an online platform called Smart Revise which is bespoke for OCR GCSE Computer Science. Completion of revision notes using bespoke revision tracker **Optional homework tasks and Literacy resources** Creation of revision resource (e.g. mind map) to be submitted alongside compulsory activity Access OCR GCSE Computer Science BBC Bitesize and complete the Exam Practice section Complete missing lessons from the Oak National Academy Access past exam papers and mark schemes here to practice your exam technique. Develop your coding and work through some interactive python lessons/challenges from LGfL or Python Principles Work through one or more challenges from 'An Algorithm A Day' to improve your ability to interpret written problems and write coded solutions read for the examination. Complete some 'Advance' questions using your Smart Revise platform login.

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