DAGENHAM PARK SUBJECT CURRICULUM	
Subject	Computer Science
Year Group	Year 10 & Year 11
Overview	**Exam Board** – Edexcel **Overview** – GCSE Computer Science will give you an insight into how the world around us has been shaped by computers and the Internet as well as how our world continues to evolve. There are six topics that make up this qualification: - **Topic 1: Computational thinking** – understanding of what algorithms are, what they are used for and how they work; ability to follow, amend and write algorithms; ability to construct truth tables. - **Topic 2: Data** – understanding of binary, data representation, data storage and compression. - **Topic 3: Computers** – understanding of hardware and software components of computer systems and characteristics of programming languages. - **Topic 4: Networks** – understanding of computer networks and network security. - **Topic 5: Issues and impact** – awareness of emerging trends in computing technologies, and the impact of computing on individuals, society and the environment, including ethical, legal and ownership issues. - **Topic 6: Problem Solving with programming** – understanding what algorithms are, what they are used for and how they work in relation to creating programs. Understanding how to decompose and analyse problems. Ability to read, write, refine and evaluate programs. - **Unit Assessment –** Paper 1 – Principles of Computer Science - Written exam: 1 hour and 30 minutes - 50% of qualification - 75 marks - This paper consists of five compulsory questions, each one focused on one of the topic areas. The questions consist of multiple-choice, short-, medium- and extended-openresponse, tabular and diagrammatic items. Paper 2 – Application of Computational Thinking - Onscreen examination: 2 hours - 50% of the qualification - 75 marks - This practical paper requires students to design, write, test and refine programs in order to solve problems. Students will complete

<table>
<tr><td></td><td>this assessment onscreen using their Integrated Development Environment (IDE) of choice.
- They will be provided with:
o coding files
o a hard copy of the question paper
o the Programming Language Subset (PLS) – as an insert in the question paper and in electronic format.
- Students should then answer the questions onscreen using Python 3. This assessment consists of six compulsory questions.</td></tr>
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<tr><td></td><td></td></tr>
<tr><td>Autumn
Half term 1</td><td><table><tr><th>Year 10</th><th>Year 11</th></tr><tr><td>Problem solving and algorithm design
Pseudocode
Linear search
Binary search
Bubble sort
Merge sort
String manipulation</td><td>Computer Security
Ethics
Wireless networks
Reliability in computers
Producing robust programs
Basic programming constructs</td></tr></table></td></tr>
<tr><td>Autumn
Half term 2</td><td><table><tr><th>Year 10</th><th>Year 11</th></tr><tr><td>Producing robust programs
Efficiency of algorithms
Logic gates and circuits
Binary system
Hexadecimal
Character sets
Images</td><td>Variables and data types
String manipulation
Data structures
Algorithm in pseudocode
File handling
Functions and procedures</td></tr></table></td></tr>
<tr><td>Spring Half term 1</td><td><table><tr><th>Year 10</th><th>Year 11</th></tr><tr><td>Sound
File formats and compression
Von Neumann architecture
The CPU</td><td>Revision & Exam practice</td></tr></table></td></tr>
<tr><td>Spring Half term 2</td><td><table><tr><th>Year 10</th><th>Year 11</th></tr><tr><td>Computer Memory
Data storage
Operating system
Low and high level languages
Introduction to computer networks</td><td>Revision & Exam practice</td></tr></table></td></tr>
<tr><td>Summer
Half term 1</td><td><table><tr><th>Year 10</th><th>Year 11</th></tr><tr><td>Network topology
Wireless networks
Network protocols
Network connections
Computer Security</td><td>Exams</td></tr></table></td></tr>
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<tr><td>Summer
Half term 2</td><td><table><tr><th>Year 10</th><th>Year 11</th></tr><tr><td>Programming Practice Project</td><td></td></tr></table></td></tr>
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<tr><td>Homework</td><td>Homework will be provided via Show My Homework to reinforce skills learnt in lesson as well as to prepare for future topics.</td></tr>
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<tr><td>Useful Resources</td><td>- Craig’n’Dave on youtube
- All resources are available on:
Sharepoint – Computing and ICT – KS4</td></tr>
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