

KS3 Computing Curriculum

Year 7 HT1	Unit Title: Impact of Technology - Collaborating online respectfully Students are shown how to use the school network and services appropriately.
Year 7 HT2	Unit Title: Programming essentials in Scratch – part 1 and part 2 Students will build confidence and knowledge of the key programming constructs. Students will build on their understanding of the control structures' sequence, selection, and iteration (the big three), and develop their problem-solving skills.
Year 7 HT3	Unit Title: Minecraft AI Students will learn how AI works, the difference between predictive and generative AI, the applications of AI and the ethical issues surrounding AI
Year 7 HT4	Unit Title: Modelling data – Spreadsheets Students will learn about the wonderful world of spreadsheets and the concept of cell referencing.
Year 7 HT5	Unit Title: Networks from semaphores to the Internet Students will learn why we network computers, the benefits and potential risks of networking computers.
Year 7 HT6	Unit Title: Sketch up Students will use a 3D building modelling application to design building

<p>Year 8 HT1</p>	<p>Unit Title: Introduction to Python programming Students will learn develop skills of text-based programming with Python. The lessons form a journey that starts with simple programs involving input and output, and gradually moves on through arithmetic operations, randomness, selection, and iteration. Emphasis is placed on tackling common misconceptions and elucidating the mechanics of program execution.</p>
<p>Year 8 HT2</p>	<p>Unit Title: Developing for the web Students will learn about the technologies that make up the internet and World Wide Web. Starting with an exploration of the building blocks of the World Wide Web, HTML, and CSS, learners will investigate how websites are catalogued and organised for effective retrieval using search engines.</p>
<p>Year 8 HT3</p>	<p>Unit Title: Data science Students will be introduced to data science, and by the end of the unit they will be empowered by knowing how to use data to investigate problems and make changes to the world around them. Students will be exposed to both global and local data sets and gain an understanding of how visualising data can help with the process of identifying patterns and trends.</p>
<p>Year 8 HT4</p>	<p>Unit Title: Binary Bits and Bobs Students will explore how computers interpret and represent data, including how images and sound are digitally encoded. They will also develop their skills in converting between binary and decimal number systems and gain an understanding of how hexadecimal codes are used in computing.</p>
<p>Year 8 HT5</p>	<p>Unit Title: Python programming with sequences of data Students will learn more advanced coding concepts such as how data can be represented and processed in sequences, such as lists and strings.</p>
<p>Year 8 HT6</p>	<p>Unit Title: Sketch up with costs Students will combine the use of spreadsheets and 3D building models using Sketchup, calculating of the costs involved in developing buildings.</p>

<p>Year 9 HT1</p>	<p>Unit Title: Python programming with sequences of data and project</p> <p>Students will learn more advanced coding concepts such as how data can be represented and processed in sequences, such as lists and strings.</p>
<p>Year 9 HT2</p>	<p>Unit Title: Media – Animations</p> <p>Students will learn how films, television, computer games, advertising, and architecture have been revolutionised by computer-based 3D modelling and animation. In this unit Students will discover how professionals create 3D animations using the industry-standard software package, Blender.</p>
<p>Year 9 HT3</p>	<p>.Unit Title: Cybersecurity</p> <p>Students will be taken on a journey of discovery of techniques that cybercriminals use to steal data, disrupt systems, and infiltrate networks. The Students will start by considering the value their data holds and what organisations might use it for. They will then learn about social engineering and other common cybercrimes, and finally look at methods to protect against these attacks.</p>
<p>Year 9 HT4</p>	<p>Unit Title: Flowal</p> <p>Students will learn the purpose and structure of flowcharts in the planning and design of coding projects. Using the Flowol application, they will apply this knowledge to solve real-world problems through a series of logical programming tasks</p>
<p>Year 9 HT5</p>	<p>Unit Title: Systems Architecture</p> <p>Students will learn about the inner workings of a computer, including the key components of the CPU, how data is processed, and the role of registers and memory in executing instructions.</p>
<p>Year 9 HT6</p>	<p>Unit Title: Representations – going audio-visual</p> <p>Students will develop skills of making digital media such as images and sounds and discover how media is stored as binary code.</p>

Term	Year 10 Curriculum Content	Assessment(s) (assessment title, duration and approx date)	Extra- Curricular Options (Places to visit; wider reading; clubs to join)
Year 10 HT1	<p>Unit Title: Students will learn about the inner workings of a CPU, internal components that make up a Computer and how Memory and Storage (in particular) interact to provide a stable computing platform. Students will also have the opportunity to develop their Programming prowess.</p> <ul style="list-style-type: none"> ● SLR1.1 Systems Architecture ● SLR1.2 Memory and Storage ● Programming 	<p>Continual, formative, in-class assessment and feedback</p> <p>End of 1.1 Topic Test - Week 4</p>	<p>PG Online Resources Course Textbook Craig & Dave Videos Quizlet OAK National</p>
Year 10 HT2	<p>Unit Title: Students will learn about the intricacies of Memory and Storage, how data is stored and manipulated in the digital realm. The Students will also learn the rudimentary operation of Computer Networks from a hardware perspective. Students will also have the opportunity to develop their Programming prowess.</p> <ul style="list-style-type: none"> ● SLR1.2 Memory and Storage ● SLR1.3 Computer Networks – Connections and Protocols ● Programming 	<p>Continual, formative, in-class assessment and feedback</p> <p>End of 1.2 Topic Test - Weeks 8 & 12 (two-parts)</p>	<p>PG Online Resources Course Textbook Craig & Dave Videos Quizlet OAK National</p>
Year 10 HT3	<p>Unit Title: Students will develop their understanding of Computer Networks further by considering and exploring the use of Protocols and various, industry-standard, networking protocols and procedures. Students will also have the opportunity to develop their Programming prowess.</p> <ul style="list-style-type: none"> ● SLR1.3 Computer Networks – Connections and Protocols ● SLR1.4 Network Security ● Programming 	<p>Continual, formative, in-class assessment and feedback</p> <p>End of 1.3 Topic Test - Week 17 End of 1.4 Topic Test - Week 20</p>	<p>PG Online Resources Course Textbook Craig & Dave Videos Quizlet OAK National</p>
Year 10 HT4	<p>Unit Title: Students will develop skills of essential Systems Software that enable Technicians to manage the equipment. Students also consider the Ethical, Legal and Cultural issues that have arisen due to the adoption of Computing, per se. Students will also have the opportunity to develop their Programming prowess.</p> <ul style="list-style-type: none"> ● SLR1.5 Systems Software ● SLR1.6 Ethical, Legal and Cultural ● Programming 	<p>Continual, formative, in-class assessment and feedback</p> <p>End of 1.5 Topic Test - Week 24 End of 1.6 Topic Test - Week 27</p>	<p>PG Online Resources Course Textbook Craig & Dave Videos Quizlet OAK National</p>
Year 10 HT5	<p>Unit Title: Students are exposed to <i>typical</i> Algorithms that are ubiquitous and therefore essential to their advancement of the Subject. Students will also have the opportunity to develop their Programming prowess.</p> <ul style="list-style-type: none"> ● SLR2.1 Algorithms ● Programming 	<p>Continual, formative, in-class assessment and feedback</p>	<p>PG Online Resources Course Textbook Craig & Dave Videos Quizlet OAK National</p>
Year 10 HT6	<p>Unit Title: Students analyse commonly used programming constructs that enable them to better understand and efficiently implement such techniques. Students will also have the opportunity to develop their Programming prowess by creating a text-based game.</p>	<p>Continual, formative, in-class assessment and feedback</p>	<p>PG Online Resources Course Textbook</p>

	<ul style="list-style-type: none">● SLR2.1 Algorithms● SLR2.2 Programming Fundamentals● Text Adventure Game	End of 2.1 Topic Test - Week 37	Craig & Dave Videos Quizlet OAK National
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Term	Year 11 Curriculum Content	Assessment(s) (assessment title, duration and approx date)	Extra-Curricular Options (Places to visit; wider reading; clubs to join)
<p>Year 11 Curriculum Overview: <i>What will year 11s study and learn this academic year? Why this/ why now?</i> Having learnt the fundamentals in Year 10, Students will now apply their knowledge to higher-order tasks that enable them to creatively and productively apply their knowledge to work of their own choosing.</p>			
<p>Year 11 HT1</p>	<p>Unit Title: Students will further develop their ‘fundamental’ programming constructs whilst also learning how to make their programs more <i>robust</i>. By understanding Boolean Logic better, Students will then be better placed to create <i>useful and efficient</i> programs.</p> <ul style="list-style-type: none"> ● SLR2.2 Programming Fundamentals ● SLR2.3 Producing Robust Programs ● SLR2.4 Boolean Logic 	<p>Continual, formative, in-class assessment and feedback</p> <p>End of 2.2 Topic Test - Week 2</p> <p>End of 2.3 Topic Test - Week 5</p>	<p>PG Online Resources Course Textbook Craig & Dave Videos Quizlet OAK National</p>
<p>Year 11 HT2</p>	<p>Unit Title: Students will be taught appropriate methods for applying Boolean Algebra to their programs and how to use the features of IDE’s to their advantage / benefit.</p> <ul style="list-style-type: none"> ● SLR2.4 Boolean Logic ● SLR2.5 Programming Languages and IDE’s 	<p>Continual, formative, in-class assessment and feedback</p> <p>End of 2.4 Topic Test - Week 8</p> <p>End of 2.5 Topic Test - Week 12</p>	<p>PG Online Resources Course Textbook Craig & Dave Videos Quizlet OAK National</p>
<p>Year 11 HT3</p>	<p>Unit Title: Examination Preparation Students will review the course content, developing their understanding by completing SLR’s and prepare for impending Examinations by answering carefully curated past examination questions.</p> <ul style="list-style-type: none"> ● Revision ● Exam Technique 	<p>SLR’s</p>	<p>PG Online Resources Course Textbook Craig & Dave Videos Quizlet OAK National</p>
<p>Year 11 HT4</p>	<p>Unit Title: Examination Preparation Students will review the course content, developing their understanding by completing SLR’s and prepare for impending Examinations by answering carefully curated past examination questions.</p> <ul style="list-style-type: none"> ● Revision ● Exam Technique 	<p>SLR’s</p>	<p>PG Online Resources Course Textbook Craig & Dave Videos Quizlet OAK National</p>
<p>Year 11 HT5</p>	<p>Unit Title: Examination Preparation Students will review the course content, developing their understanding by completing SLR’s and prepare for impending Examinations by answering carefully curated past examination questions.</p> <ul style="list-style-type: none"> ● Revision ● Exam Technique 	<p>SLR’s</p>	<p>PG Online Resources Course Textbook Craig & Dave Videos Quizlet OAK National</p>

Term	Year 12 Curriculum Content	Assessment(s) (assessment title, duration and approx date)	Extra-Curricular Options (Places to visit; wider reading; clubs to join)
Year 12 Curriculum Overview: What will year 12s study and learn this academic year? Why this/ why now?			
Year 12 HT1	Unit Title: Students will learn about the intricacies of the CPU (LMC) and understand how the various components of the CPU interact and communicate, appreciating the role of Buses, Registers and the like. Students will understand that there are two main Processor Architectures out there, and that modern Processors will borrow from either Architecture to better achieve its goal. Students will also develop their programming ability through a range of structured activities. <ul style="list-style-type: none"> ● SLR1 Structure and Function of the Processor ● SLR2 Types of Processor ● Programming Practice 	<u>End-of-Topic Tests:</u> SLR1 Structure and Function of the Processor – Wk5 SLR2 Types of Processor – Wk6	PG Online Resources Course Textbook Craig & Dave Videos Quizlet Isaac Computer Science https://www.101computing.net/LMC/
Year 12 HT2	Unit Title: Students will learn how data is captured, manipulated, output and stored. They will then learn how data can take various forms and appreciate the implications of <i>interpretation</i> . Students will also learn advanced Boolean Algebra that will allow them to develop efficient code and explore operating systems and systems software to better understand the processes involved. Students will also develop their programming ability through a range of structured activities. <ul style="list-style-type: none"> ● SLR3 Input, Output and Storage ● SLR13 Data Types ● SLR15 Boolean Algebra ● SLR4 Operating Systems and Systems Software ● Programming Practice 	<u>End-of-Topic Tests:</u> SLR3 Input, Output and Storage – Wk8 SLR13 Data Types – Wk10 SLR15 Boolean Algebra – Wk12 SLR4 Operating Systems and Systems Software – Wk14	PG Online Resources Course Textbook Craig & Dave Videos Quizlet Isaac Computer Science
Year 12 HT3	Unit Title: Students will appreciate how Legislation has had to adapt to the ever-changing technological world by analysing appropriate legislation and exploring case studies. Students will also learn the stages of compilation that allow source code generate object code. Students will also consider different software methodologies, appreciating their strengths and weaknesses. Students will also learn about databases, create their own and learn SQL by manipulating this Database. Students will also develop their programming ability through a range of structured activities.	<u>End-of-Topic Tests:</u> SLR16 Computer Related Legislation – Wk17 SLR5 Application Generation – Wk19 SLR6 Software Development – Wk20 SLR10 Databases – Wk21	PG Online Resources Course Textbook Craig & Dave Videos Quizlet Isaac Computer Science

	<ul style="list-style-type: none"> ● SLR16 Computer Related Legislation ● SLR5 Application Generation ● SLR6 Software Development ● SLR10 Databases ● Programming Practice 		
Year 12 HT4	<p>Unit Title: Students will examine networks and extend this knowledge into web technologies to better appreciate the interaction between the two, and therefore the wealth of facility provided. They will then consider the ethical, moral and cultural issues that arise when delivering services globally. Data structures builds on their Database knowledge acquired last HT. Students will also develop their programming ability through a range of structured activities.</p> <ul style="list-style-type: none"> ● SLR11 Networks ● SLR12 Web Technologies ● SLR17 Ethical, Moral and Cultural Issues ● SLR14 Data Structures ● SLR8 Introduction to Programming 	<p><u>End-of-Topic Tests:</u> SLR11 Networks – Wk23 SLR12 Web Technologies – Wk24 SLR17 Ethical, Moral and Cultural Issues – Wk25 SLR14 Data Structures – Wk26</p>	<p>PG Online Resources Course Textbook Craig & Dave Videos Quizlet Isaac Computer Science</p>
Year 12 HT5	<p>Unit Title: Students will learn about how professional programmers apply certain techniques, appropriate for the task, to develop programs that satisfy the needs of their clients.</p> <ul style="list-style-type: none"> ● SLR23 Programming Techniques ● SLR18 Thinking Abstractly ● SLR19 Thinking Ahead ● SLR20 Thinking Procedurally ● SLR21 Thinking Logically ● SLR25 Algorithms 	<p><u>End-of-Topic Tests:</u> SLR18 Thinking Abstractly – Wk28 SLR19 Thinking Ahead – Wk29 SLR20 Thinking Procedurally – Wk30 SLR21 Thinking Logically – Wk31</p>	<p>PG Online Resources Course Textbook Craig & Dave Videos Quizlet Isaac Computer Science</p>
Year 12 HT6	<p>Unit Title: Students will revise for their PPE Examination by completing Craig and Dave SLR's. Once the PPE is complete, the Students will then prepare for their Unit 3 Project which is worth 20% of their final grade.</p> <ul style="list-style-type: none"> ● Revision ● Yr13 Course Introduction and preparation for Unit 3 - Project 	<p>PPE Examination</p>	<p>PG Online Resources Course Textbook Craig & Dave Videos Quizlet Isaac Computer Science</p>

Term	Curriculum Content	Assessment(s) (assessment title, duration and approx date)	Extra- Curricular Options (Places to visit; wider reading; clubs to join)
Year 13 Curriculum Overview: <i>What will year 13s study and learn this academic year? Why this/ why now?</i>			
Year 13 HT1	Unit Title: Students will recap SLR’s 1-6 from Yr12 as it nicely dovetails into SLR7 where Students will investigate several Programming Languages. In SLR9, they will also learn about different Compression, Encryption and Hashing techniques, appreciating their advantages and disadvantages and likely scenarios where to use them. <ul style="list-style-type: none"> ● SLR1 - 6 recap ● SLR7 Types of Programming Language ● SLR9 Compression, Encryption and Hashing ● Project: Definition and Analysis 	<u>End-of-Topic Test:</u> SLR7 Types of Programming Language – Wk6 SLR9 Compression, Encryption and Hashing – Wk7	PG Online Resources Course Textbook Craig & Dave Videos Quizlet Isaac Computer Science
Year 13 HT2	Unit Title: Students will learn about Databases, Networks and Web Technologies that synergise around the representation of data, and their transmission and storage. <ul style="list-style-type: none"> ● SLR10 Databases ● SLR11 Networks ● SLR12 Web Technologies ● SLR13 Data Types ● Project: Design and Development 	PPE Assessment	PG Online Resources Course Textbook Craig & Dave Videos Quizlet Isaac Computer Science
Year 13 HT3	Unit Title: Students will further develop their understanding of Boolean Algebra and revisit SLR’s 16 Computer Related Legislation & 17 Ethical, Moral and Cultural Issues. <ul style="list-style-type: none"> ● SLR15 Boolean Algebra ● SLR 16 & 17 Recap ● Project: Development 	<u>End-of-Topic Test:</u> SLR14 Data Structures - Wk17	PG Online Resources Course Textbook Craig & Dave Videos Quizlet Isaac Computer Science
Year 13 HT4	Unit Title: Students will revise SLR’s 18-23 and be introduced to Computational Methods (efficient algorithms) that achieve a variety of tasks. <ul style="list-style-type: none"> ● SLR18 – 23 Recap ● SLR24 Computational Methods ● Project: Development 	<u>End-of-Topic Test:</u> SLR24 Computational Methods – Wk26	PG Online Resources Course Textbook Craig & Dave Videos Quizlet Isaac Computer Science
Year 13 HT5	Unit Title: Students will recap SLR25 and will code the efficient algorithms of SLR24. <ul style="list-style-type: none"> ● SLR25 Recap ● SLR26 Algorithms ● Project: Evaluation 	<u>End-of-Topic Test:</u> SLR26 Algorithms – Wk32	PG Online Resources Course Textbook Craig & Dave Videos

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