CLAYTON HALL ACADEMY
Faculty and Department Curriculum and Assessment Handbook

Name of Faculty/Department: 21st Century Technology/ **Computer Science**

Our Curriculum Intent

The Technology team aim to develop resilient, independent and confident students who have practical and evaluative skills and analytical knowledge in our wide range of vocational subjects.

Students are encouraged to foster globally responsible attitudes through investigating materials, technological developments and an understanding of sustainability on a local, national and international level.

All our subjects include an understanding of how the world works and going forward to anticipate jobs that have not yet even been created. Technology is an ever-expanding discipline that has problem solving at its core, is academic as well as practical, involves learning through doing and we hope above all, enjoyable.

Gold Standard Teaching and Learning in Computer Science

Goal Orientated (Planning for Progress)
· Data driven Seating plans (highlighting DP, HAPs, MAPs, LAP, SEN)
· Students will engage in a Starter Task in every lesson (this can be a written or an oracy task).
· Differentiated Blooms, learning objectives displayed clearly.
· Students understand the Big Picture, what they are learning and why: links to prior learning made clear.
· Clearly identified links to Personal Development (RIC).
· Highly effective questioning to identify and address misconceptions.
· Formative and Summative Assessment to diagnose and inform next steps.
· Model excellence and how to achieve it.
· Revisit and 'low stakes' testing e.g. Starter and Plenary quizzes to make connections and support recall.
Open dialogue (Feedback for improvement)
· High quality feedback is given in response to specific pieces of work.
· Progress tracked on student's assessment maps.
· Regular formative assessment will be varied and impactful e.g. framed as a question as opposed to a comment.
· Live marking is encouraged to manage workload and teachers are encouraged to have 'purple pen in hand' when they are intervening with students during the lesson.
· Literacy corrections in line with stickers.
· Student response to feedback (DIRT) using green pen.
· Self and peer-assessment used to develop independence.
Learning Environment
· Positive Learning Environment created by mutually respectful relationships (staff/pupil + pupil/pupil).
· Adults consistently model the values of the school and support curriculum intent.
· Engaged, enthused and independent learners- Lighting Fires Curriculum.

· Reward effort and resilience by providing opportunities for students to speculate, investigate, and make mistakes.

· Consistent application of the Consequence and Achievement system.

· Students show pride in their learning through the presentation of their work:

     o Neat organised books/folders with Assessment maps and Target stickers

     o Date and title underlined with a ruler- classwork and home study clearly identified

     o Support should be provided for students who miss lessons, either through Teams or via email.

Differentiation for Challenge and support

· Use of data and student information to plan for individual needs. (Prior Attainment, FFT 20/5 Target data, SEND)

· Differentiated learning outcomes (these can be verbalised or displayed in the classroom)

· Stretch and challenge- upholding high expectations for HAPs (Over 50% of our cohort)

· Targeted questioning- include all students and make students think, using open and follow up questions to expand understanding. No hands up.

· Improve oracy in the classroom; students respond to questions or contributions in full sentences (talk for writing).

· Additional intervention for disadvantaged, Vulnerable, VIP, with a particular focus on Narrowing the Word Gap.

Long Term Curriculum and Assessment Plan – Key Stage 4

Year 9

When?	What we are Learning and Assessing e.g. Topics/ Skills etc	How we are Assessing e.g. Extended writing, Project, exam etc	Links Backwards and Forward When was it last covered & when next?
Autumn 1	Algorithms and pseudocode. Algorithms are sequences of instructions used to solve problems. Pseudocode is a plain language, closer to English than a programming language. Pupils will learn how to write algorithms using pseudocode. Pupils will also use Python (a programming language) to code their algorithms.	Practical programs where pupil's coding skills are assessed. Pupils will create algorithms on Python and will be assessed on their use of selection (IF Statements), and iteration (loops) and comments (to explain their code).	Pseudocode (which is a plain language, closer to English than a programming language) will link to computational thinking developed in year 7 and year 8 through Scratch programming and Python programming (two different programming platforms). Pseudocode algorithms will continue throughout the next three years.
Autumn 2	Algorithms and pseudocode. Algorithms are sequences of instructions used to solve problems. In addition, searching techniques such as binary and linear searches will be explored and compared. Pupils will also look at sorting techniques (bubble and merge) and compare both in terms of advantages and disadvantages. Pseudocode is a plain language, closer to English than a programming language. Pupils will learn how to write algorithms using pseudocode. Pupils will also use Python (a programming language) to code their algorithms.	Practical programs where pupil's coding skills are assessed. Pupils will create algorithms on Python and will be assessed on their use of selection (IF Statements), iteration (loops), sub-routines, variables, and comments (to explain their code).	Pseudocode (which is a plain language, closer to English than a programming language) will link to computational thinking developed in year 7 and year 8 through Scratch programming and Python programming (two different programming platforms). Pseudocode algorithms will continue throughout the next three years. This will also build on concepts developed in Autumn 1.
Spring 1	Data Representation and programming. Pupils will learn how computers represent numbers, images, characters and sound using machine code.	Exam Questions will be derived from or based on previous AQA exam papers. Pupils will complete peer assess topic question sheets (marked out of 20). Pupils will then file	Data Representation will build on concepts like binary which would have been discussed in the Computer Systems unit in year 7 with programming linking in directly to the Python programming language.

When?	What we are Learning and Assessing e.g. Topics/ Skills etc	How we are Assessing e.g. Extended writing, Project, exam etc	Links Backwards and Forward When was it last covered & when next?
	This unit will require pupils to calculate file sizes using set formulas.	these away in their Data Representation folders for revision). These sheets will have topic information on one side and questions on the other, therefore providing reference material for exams. Pupils will complete an end of unit assessment on Data Representation. This will be a customised paper using exam questions based on AQA papers. There will be regular (almost every lesson) interactive quizzes on Data Representation throughout this unit of work that will allow for real-time assessment and the removal of misconceptions.	
Spring 2	Computer Systems and programming. Pupils will learn how internal components of a computer system operate. The components covered include the CPU, clock, hard-drives (optical, magnetic and flash), RAM and cache. Pupils will also continue their coding development using Python.	Exam Questions will be derived from or based on previous AQA exam papers. Pupils will complete peer assess topic question sheets (marked out of 20). Pupils will then file these away in their Computer Systems folders for revision. These sheets will have topic information on one side and questions on the other, therefore providing reference material for exams. Pupils will complete an end of unit assessment on Computer Systems. This will be a customised paper using exam questions based on AQA papers. There will be regular (almost every lesson) interactive quizzes on Computer Systems throughout this unit of work that will allow for	Computer Systems will build on concepts like binary (which is the machine code used by computers to represent text, images and sound) which would have been discussed in the Computer Systems unit in year 7. The programming will relate to the Python and Scratch programming that pupils did in year 7 and year 8.

When?	What we are Learning and Assessing e.g. Topics/ Skills etc	How we are Assessing e.g. Extended writing, Project, exam etc	Links Backwards and Forward When was it last covered & when next?
		real-time assessment and the removal of misconceptions.	
Summer 1	Networks and programming. Pupils will learn what a network is, the various types of networks available (Star, Bus, PAN, LAN, WAN, Wi-Fi), the protocols used by these networks and advantages and disadvantages involved. Pupils will also continue their coding development using Python.	Exam Questions will be derived from or based on previous AQA exam papers. Pupils will complete peer assess topic question sheets (marked out of 20). Pupils will then file these away in their Networks folders for revision. These sheets will have topic information on one side and questions on the other, therefore providing reference material for exams. Pupils will complete an end of unit assessment on Networks. This will be a customised paper using exam questions based on AQA papers. There will be regular (almost every lesson) interactive quizzes on Networks throughout this unit of work that will allow for real-time assessment and the removal of misconceptions. Pupils will continue to create algorithms in pseudocode at least once a week. These algorithms will be peer assessed to a mark scheme.	Programming linking in directly to Python and Scratch which will have been touched on in year 7 and year 8. Networking concepts will have been introduced in year 7.
Summer 2	Networks and programming Pupils will learn what a network is, the various types of networks available (Star, Bus, PAN, LAN, WAN), the protocols used by these networks and advantages and disadvantages involved.	Exam Questions will be derived from or based on previous AQA exam papers. Pupils will complete peer assess topic question sheets (marked out of 20). Pupils will then file these away in their Networks folders for revision. These sheets will have topic	Programming linking in directly to Python and Scratch which will have been touched on in year 7 and year 8. Networking concepts will have been introduced in year 7. Continual low stakes quizzes to consolidate learning to take place and unit will be revisited in year 11.

When?	What we are Learning and Assessing e.g. Topics/ Skills etc	How we are Assessing e.g. Extended writing, Project, exam etc	Links Backwards and Forward When was it last covered & when next?
	Pupils will also continue their coding development using Python.	information on one side and questions on the other, therefore providing reference material for exams. Pupils will complete an end of unit assessment on Networks. This will be a customised paper using exam questions based on AQA papers. There will be regular (almost every lesson) interactive quizzes on Networks throughout this unit of work that will allow for real-time assessment and the removal of misconceptions. Pupils will continue to create algorithms in pseudocode at least once a week. These algorithms will be peer assessed to a mark scheme.	

Year 10

When?	What we are Learning and Assessing e.g. Topics/ Skills etc	How we are Assessing e.g. Extended writing, Project, exam etc	Links Backwards and Forward When was it last covered & when next?
Autumn 1	Cyber Security Pupils will learn about cyber security threats, including malware and social engineering. In addition, pupils will also investigate methods to prevent cyber security threats, including penetration testing, access rights, firewalls, mac addresses, authentication, and verification.	Exam Questions will be derived from or based on previous AQA exam papers. Pupils will complete peer assess topic question sheets (marked out of 20). Pupils will then file these away in their Cyber Security folders for revision. These sheets will have topic information on one side and questions on the other, therefore providing reference material for exams. Pupils will complete an end of unit assessment on Cyber Security. This will be a customised paper using exam questions based on AQA papers. There will be regular (almost every lesson) interactive quizzes on Cyber Security throughout this unit of work that will allow for real-time assessment and the removal of misconceptions.	Viruses and security covered in year 7 and will also be consolidated in Spring 2 year 11.
Autumn 2	Ethics and the Law Pupils will explore the ethical, legal, and environmental issues surrounding technology. These issues include: • mobile technologies • wireless networking • cloud storage • theft of computer code • issues around copyright of algorithms • cracking • hacking	Exam Questions will be derived from or based on previous AQA exam papers. Pupils will complete peer assess topic question sheets (marked out of 20). Pupils will then file these away in their Ethics and the Law folders for revision. These sheets will have topic information on one side and questions on the other, therefore providing reference material for exams. Pupils will complete an end of unit assessment on Ethics and the Law. This will be a customised	Ethics and the Law will be covered again in year 11 Summer 1.

When?	What we are Learning and Assessing e.g. Topics/ Skills etc	How we are Assessing e.g. Extended writing, Project, exam etc	Links Backwards and Forward When was it last covered & when next?
	• wearable technologies • computer based implants	paper using exam questions based on AQA papers. There will be regular (almost every lesson) interactive quizzes on Ethics and the Law throughout this unit of work that will allow for real-time assessment and the removal of misconceptions.	
Spring 1	Algorithms and Programming (recap) Algorithms are sequences of instructions used to solve problems. In addition, searching techniques such as binary and linear searches will be explored and compared. Pupils will also look at sorting techniques (bubble and merge) and compare both in terms of advantages and disadvantages. Pseudocode is a plain language, closer to English than a programming language. Pupils will consolidate how to write algorithms using pseudocode. Pupils will also use Python (a programming language) to code their algorithms.	Practical programs where pupil's coding skills are assessed. Pupils will create algorithms on Python and will be assessed on their use of selection (IF Statements), iteration (loops), sub-routines, variables, and comments (to explain their code). There will be regular (almost every lesson) interactive quizzes on various topics throughout this unit of work that will allow for real-time assessment and the removal of misconceptions. Pupils will continue to create algorithms in pseudocode. These algorithms will be peer assessed to a mark scheme.	This was covered in year 9 Autumn 1 and 2. Pseudocode and programming will be a continuous theme throughout the course with algorithms being written and read throughout the three years.
Spring 2	Programming preparation for the CA Pupils will prepare for their programming project by consolidating skills tailored to their project scenario. This project, though non-assessed, is mandatory and subject to inspection by the exam board.	Practical programs where pupil's coding skills are assessed. Pupils will create algorithms on Python and will be assessed on their use of selection (IF Statements), iteration (loops), sub-routines, variables, and comments (to explain their code). Higher level programming techniques such as	This is a one-off project that will be scrutinised by the exam board. This will be based on skills and concepts delivered in year 9 and year 10.

When?	What we are Learning and Assessing e.g. Topics/ Skills etc	How we are Assessing e.g. Extended writing, Project, exam etc	Links Backwards and Forward When was it last covered & when next?
	Pupils will complete smaller-scale projects involving the design, coding, and testing of their algorithms. These projects will prepare pupils for the larger scale exam board programming project.	writing to text files and the use of lists and arrays.	
Summer 1	Programming preparation for the Programming Project/Commencement of Programming Project. Pupils will prepare for their programming project by consolidating skills tailored to their project scenario. This project, though non-assessed, is mandatory and subject to inspection by the exam board. Pupils will complete smaller-scale projects involving the design, coding, and testing of their algorithms. These projects will prepare pupils for the larger scale exam board programming project. Pupils will then commence work on their AQA Programming Project. This project will be specified by AQA and pupils must work within the parameters set by the exam board. Pupils will also be provided with opportunities to engage with multi-topic exam questions at the start of these sessions to maintain knowledge gained from previous units.	Practical programs where pupil's coding skills are assessed. Pupils will create algorithms on Python and will be assessed on their use of selection (IF Statements), iteration (loops), sub-routines, variables, and comments (to explain their code). Higher level programming techniques such as writing to text files and the use of lists and arrays. Exam Questions will be derived from or based on previous AQA exam papers. There will be regular (almost every lesson) interactive quizzes on various topics throughout this unit of work that will allow for real-time assessment and the removal of misconceptions.	This is a one-off project that will be scrutinised by the exam board. This will be based on skills and concepts delivered in year 9 and year 10.
Summer 2	Programming Project and multi-topic exam preparation.	Pupils will create algorithms on Python and will be assessed on their use of selection (IF Statements), iteration (loops), sub-routines, variables, and comments (to explain their code).	This is a one-off project that will be scrutinised by the exam board. This will be based on skills and concepts delivered in year 9 and year 10.

When?	What we are Learning and Assessing e.g. Topics/ Skills etc	How we are Assessing e.g. Extended writing, Project, exam etc	Links Backwards and Forward When was it last covered & when next?
	Pupils will continue work on their AQA Programming Project. This project will be specified by AQA and pupils must work within the parameters set by the exam board. Pupils will also be provided with opportunities to engage with multi-topic exam questions at the start of these sessions to maintain knowledge gained from previous units.	Higher level programming techniques such as writing to text files and the use of lists and arrays. Exam Questions will be derived from or based on previous AQA exam papers. There will be regular (almost every lesson) interactive quizzes on various topics throughout this unit of work that will allow for real-time assessment and the removal of misconceptions.	

Year 11

When?	What we are Learning and Assessing e.g. Topics/ Skills etc	How we are Assessing e.g. Extended writing, Project, exam etc	Links Backwards and Forward When was it last covered & when next?
Autumn 1	Pupils will consolidate previous learning of Algorithms and searching/sorting techniques. Algorithms are sequences of instructions used to solve problems. In addition, searching techniques such as binary and linear searches will be explored and compared. Pupils will also look at sorting techniques (bubble and merge) and compare both in terms of advantages and disadvantages. Pseudocode is a plain language, closer to English than a programming language. Pupils will consolidate how to write algorithms using pseudocode. Pupils will also use Python (a programming language) to code their algorithms.	Practical programs where pupil's coding skills are assessed. Pupils will create algorithms on Python and will be assessed on their use of selection (IF Statements), iteration (loops), sub-routines, variables, and comments (to explain their code). There will be regular (almost every lesson) interactive quizzes on various topics throughout this unit of work that will allow for real-time assessment and the removal of misconceptions. Pupils will continue to create algorithms in pseudocode. These algorithms will be peer assessed to a mark scheme.	This was covered in year 9 Autumn 1 and 2 as well as in year 10 Spring 1. Pseudocode and programming will be a continuous theme throughout the course with algorithms being written and read throughout the three years. One of the exam papers will be based on algorithms and pseudocode.
Autumn 2	Data Representation and programming. Pupils will consolidate previous learning of computers represent numbers, images, characters and sound using machine code. This unit will require pupils to calculate file sizes using set formulas.	Exam Questions will be derived from or based on previous AQA exam papers. Pupils will complete peer assess topic question sheets (marked out of 20). Pupils will then file these away in their Data Representation folders for revision). These sheets will have topic information on one side and questions on the other, therefore providing reference material for exams. Pupils will complete an end of unit assessment on Data Representation. This will be a customised paper using exam questions based on AQA papers.	Last covered in Spring 1 Year 9. This will form part of one of the theoretical units that will generate questions on paper 2.

When?	What we are Learning and Assessing e.g. Topics/ Skills etc	How we are Assessing e.g. Extended writing, Project, exam etc	Links Backwards and Forward When was it last covered & when next?
		There will be regular (almost every lesson) interactive quizzes on Data Representation throughout this unit of work that will allow for real-time assessment and the removal of misconceptions.	
Spring 1	Networks Pupils will consolidate previous learning of what a network is, the various types of networks available (Star, Bus, PAN, LAN, WAN), the protocols used by these networks and advantages and disadvantages involved.	Exam Questions will be derived from or based on previous AQA exam papers. Pupils will complete peer assess topic question sheets (marked out of 20). Pupils will then file these away in their Networks folders for revision. These sheets will have topic information on one side and questions on the other, therefore providing reference material for exams. Pupils will complete an end of unit assessment on Networks. This will be a customised paper using exam questions based on AQA papers. There will be regular (almost every lesson) interactive quizzes on Networks throughout this unit of work that will allow for real-time assessment and the removal of misconceptions. Pupils will continue to create algorithms in pseudocode at least once a week. These algorithms will be peer assessed to a mark scheme.	Programming linking in directly to Python and Scratch which will have been touched on in year 7 and year 8. Networking concepts will have been introduced in year 7. Continual low stakes quizzes to consolidate learning to take place throughout this year.
Spring 2	Cyber Security Pupils will consolidate their learning of cyber security threats, including malware and social engineering.	xam Questions will be derived from or based on previous AQA exam papers. Pupils will complete peer assess topic question sheets (marked out of 20). Pupils will then file these away in their Cyber Security folders for	Viruses and security covered in year 7 and Autumn 1 year 10. Last covered in Spring 1 Year 9. This will form part of one of the theoretical units that will generate questions on paper 2

When?	What we are Learning and Assessing e.g. Topics/ Skills etc	How we are Assessing e.g. Extended writing, Project, exam etc	Links Backwards and Forward When was it last covered & when next?
	In addition, pupils will also investigate methods to prevent cyber security threats, including penetration testing, access rights, firewalls, mac addresses, authentication, and verification.	revision. These sheets will have topic information on one side and questions on the other, therefore providing reference material for exams. Pupils will complete an end of unit assessment on Cyber Security. This will be a customised paper using exam questions based on AQA papers. There will be regular (almost every lesson) interactive quizzes on Cyber Security throughout this unit of work that will allow for real-time assessment and the removal of misconceptions.	
Summer 1	Ethics and the Law Pupils will consolidate their learning of the ethical, legal, and environmental issues surrounding technology. These issues include: • mobile technologies • wireless networking • cloud storage • theft of computer code • issues around copyright of algorithms • cracking • hacking • wearable technologies • computer based implants	Exam Questions will be derived from or based on previous AQA exam papers. Pupils will complete peer assess topic question sheets (marked out of 20). Pupils will then file these away in their Ethics and the Law folders for revision. These sheets will have topic information on one side and questions on the other, therefore providing reference material for exams. Pupils will complete an end of unit assessment on Ethics and the Law. This will be a customised paper using exam questions based on AQA papers. There will be regular (almost every lesson) interactive quizzes on Ethics and the Law throughout this unit of work that will allow for real-time assessment and the removal of misconceptions.	Ethics and the Law was covered in Autumn 2 year 10. This will form part of one of the theoretical units that will generate questions on paper 2

Key Stage 4 Examination Overview
Exam Board Details: AQA

Qualification Details
AQA Paper 1: Problem Solving
AQA Paper 2: Theory

What resources could I buy or borrow that will help my child?
AQA My Revision Notes 2016 ISBN 9781471886591

What are the key websites or Apps that my child could use?
AQA Website

What can I do to encourage my child to take a further interest in Computer Science?
Go to Code.org – try games

What after school or other extracurricular activities are available in Computer Science and when are they?
Wednesday lunchtime
Robotics STEM after school on Mondays