GCSE – YEAR 11 – COMPUTER SCIENCE – CURRICULUM OVERVIEW

CURRICULUM MAP

Autumn Term		Spring Term		Summer Term	
Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Key Themes	**Key Themes**	**Key Themes**	**Key Themes**	**Key Themes**	**Key Themes**
2.3.1 Defensive design 2.3.2 Testing 2.2.1 Programming fundamentals	2.4.1 Boolean Logoc 2.5.1 Languages 2.5.2 The Integrated Development Environment (IDE) Programming Tasks	Unit 1 Computer systems Revision Past Papers	Unit 2 Computational thinking, algorithms and programming Revision Past Papers	Past Papers Exam Preparation	
Assessment / Composite Tasks	**Assessment / Composite Tasks**	**Assessment / Composite Tasks**	**Assessment / Composite Tasks**	**Assessment / Composite Tasks**	**Assessment / Composite Tasks**
Half-Term Assessment	Half-Term Assessment	Half-Term Assessment	Half-Term Assessment	Half-Term Assessment	

GCSE – YEAR 11 – COMPUTER SCIENCE – CURRICULUM OVERVIEW

SCHEME OF WORK

Autumn Half Term One: Key Theme – 2.3 – Producing robust programs					
	Intent (weekly outline)	Implementation (T and L Pedagogy/components used)	Impact	Powerful Knowledge (keywords and terminology)	Personal Development Links
Week 1	2.3.1 Defensive design	**Teaching Strategies** Case Studies Debates Role-Playing Guest Speakers Flipped Classroom Project-Based Learning (PBL) Group Discussions Think-Pair-Share Interactive Lectures Problem-Based Learning **Learning Activities** Research Projects Critical Analysis Essays Collaborative Group Work Peer Review Multimedia Presentations Mind Mapping Digital Tools and Resources Educational Videos Interactive Websites Quizzes **Assessment Methods** Formative Assessments	✓ Understanding of the issues a programmer should consider to ✓ ensure that a program caters for all likely input values ✓ Understanding of how to deal with invalid data in a program ✓ Authentication to confirm the identity of a user ✓ Practical experience of designing input validation and simple authentication (e.g. username and password) ✓ Understand why commenting is useful and apply this appropriately	Defensive Design Validation Verification Input Sanitization Authentication Authorization Error Handling Testing	Improving focus and memory retention techniques. Learning time management and productivity techniques. Developing effective communication skills. Applying the cycle of learning new skills, understanding them, and putting them into practice.
Week 2	2.3.1 Defensive design				
Week 3	2.3.2 Testing		✓ The difference between testing modules of a program during development and testing the program at the end of production ✓ Syntax errors as errors which break the grammatical rules of the programming language and stop it from being run/translated ✓ Logic errors as errors which produce unexpected output	Testing Test Plan Test Data Expected Outcome Actual Outcome Validation Verification Debugging Alpha Testing Beta Testing Black Box Testing White Box Testing	
Week 4	2.3.2 Testing				

		Summative Assessments Peer Assessments Self-Assessments Rubrics and Checklists Multiple-Choice Questions Short Answer Questions	✓ Normal test data as data which should be accepted by a program without causing errors	Functional Testing Boundary Testing Valid Invalid	
Week 5	2.2.1 Programming fundamentals		✓ Practical use of the techniques in a high-level language ✓ Understanding of each technique ✓ Recognise and use the comparison and arithmetic operators	Programming Language Syntax Variable Data Type Constants Operators Conditional Statements Loops (Iteration) Functions (Procedures) Parameters Return Values Arrays Lists (or ArrayLists) String Manipulation Input and Output (I/O) File Handling Debugging Algorithms Pseudocode	
Week 6	2.2.1 Programming fundamentals				
Week 7	2.2.1 Programming fundamentals				

Autumn Half Term Two: Key Theme – 2.4 Boolean Logic & 2.5 – Programming languages and Integrated Development Environment					
	Intent (weekly outline)	Implementation (T and L Pedagogy/components used)	Impact	Powerful Knowledge (keywords and terminology)	Personal Development Links
Week 1	2.4.1 Boolean Logic	**Teaching Strategies** Case Studies Debates Role-Playing Guest Speakers	✓ Knowledge of the truth tables for each logic gate ✓ Recognition of each gate symbol	Boolean Logic Logical Operators AND (∧) OR (∨) NOT (¬)	Improving focus and memory retention techniques.

GCSE – YEAR 11 – COMPUTER SCIENCE – CURRICULUM OVERVIEW

		Flipped Classroom Project-Based Learning (PBL) Group Discussions Think-Pair-Share Interactive Lectures Problem-Based Learning **Learning Activities** Research Projects Critical Analysis Essays Collaborative Group Work Peer Review Multimedia Presentations Mind Mapping Digital Tools and Resources Educational Videos Interactive Websites Quizzes **Assessment Methods** Formative Assessments Summative Assessments Peer Assessments Self-Assessments Rubrics and Checklists Multiple-Choice Questions Short Answer Questions	✓ Understanding of how to create, complete or edit logic diagrams and truth tables for given scenarios ✓ Ability to work with more than one gate in a logic diagram	Truth Table Logical Expression Logic Gates AND Gate OR Gate NOT Gate Boolean Expressions	Learning time management and productivity techniques. Developing effective communication skills. Applying the cycle of learning new skills, understanding them, and putting them into practice.
Week 2			✓		
Week 3	2.5.1 Languages		✓ The differences between high-level and low-level programming languages ✓ The need for translators ✓ The differences, benefits and drawbacks of using a compiler or an interpreter	Programming Languages High-Level Languages Low-Level Languages Assembly Language Machine Code Source Code Object Code Compiler Interpreter Assembler	
Week 4					
Week 5	2.5.2 The Integrated Development Environment (IDE)		✓ The differences between high-level and low-level programming ✓ languages ✓ The need for translators ✓ he differences, benefits and drawbacks of using a compiler or an interpreter	Integrated Development Environment (IDE) Source Code Syntax Auto-completion Error Checking Debugger Breakpoints Step Through Code Run-time Environment Compiler Interpreter	
Week 6					

GCSE – YEAR 11 – COMPUTER SCIENCE – CURRICULUM OVERVIEW

Week 7	Programming Tasks		✓ Practical use of the techniques in a high-level language ✓ Understanding of each technique ✓ Recognise and use the comparison and arithmetic operators	Programming Language Syntax Variable Data Type Constants Operators Conditional Statements Loops (Iteration) Functions (Procedures) Parameters Return Values Arrays Lists (or ArrayLists) String Manipulation Input and Output (I/O) File Handling Debugging Algorithms Pseudocode	

Spring Half Term One: Key Theme – Revision and Exam Prep

	Intent (weekly outline)	Implementation (T and L Pedagogy/components used)	Impact	Powerful Knowledge (keywords and terminology)	Personal Development Links
Week 1	1.1 Systems architecture Paper 1 2018	Direct Instruction Interactive Learning Practical Activities Collaborative Learning Formative Assessment Flipped Classroom Key Terms and Definitions Diagrams and Visual Aids	✓ Recap of the unit ✓ General exam preparation		Improving focus and memory retention techniques. Learning time management
Week 2	1.2 Memory and storage Paper 2 2018		✓ Recap of the unit ✓ General exam preparation		

GCSE – YEAR 11 – COMPUTER SCIENCE – CURRICULUM OVERVIEW

Week 3	1.3 Computer networks, connections and protocols Paper 1 2019	Simulations and Software Tools Hands-On Activities Assessment Tools	✓ Recap of the unit ✓ General exam preparation		and productivity techniques. Developing effective communication skills. Applying the cycle of learning new skills, understanding them, and putting them into practice.
Week 4	1.4 Network security Paper 2 1019		✓ Recap of the unit ✓ General exam preparation		
Week 5	1.5 Systems software Paper 1 2020		✓ Recap of the unit ✓ General exam preparation		
Week 6	1.6 Ethical, legal, cultural and environmental impacts of digital technology Paper 2 2020		✓ Recap of the unit ✓ General exam preparation		

Spring Half Term Two: Key Theme – Revision and Exam Prep

	Intent (weekly outline)	Implementation (T and L Pedagogy/components used)	Impact	Powerful Knowledge (keywords and terminology)	Personal Development Links
Week 1	2.1 Algorithms Paper 1 2021	Direct Instruction Interactive Learning Practical Activities Collaborative Learning Formative Assessment Flipped Classroom Key Terms and Definitions Diagrams and Visual Aids Simulations and Software Tools Hands-On Activities Assessment Tools	✓ Recap of the unit ✓ General exam preparation		Improving focus and memory retention techniques. Learning time management and productivity techniques. Developing effective
Week 2	2.2 Programming fundamentals Paper 2 2021		✓ Recap of the unit ✓ General exam preparation		
Week 3	2.3 Producing robust programs Paper 1 2022		✓ Recap of the unit ✓ General exam preparation		

GCSE – YEAR 11 – COMPUTER SCIENCE – CURRICULUM OVERVIEW

Week 4	2.4 Boolean logic Paper 2 2022	Project-Based Learning	✓ Recap of the unit ✓ General exam preparation		communication skills. Applying the cycle of learning new skills, understanding them, and putting them into practice.
Week 5	2.5 Programming languages and Integrated Development Environments Paper 1 2023		✓ Recap of the unit ✓ General exam preparation		
Week 6	Programming Tasks Paper 2 2023		✓ Recap of the unit ✓ General exam preparation		

Summer Half Term One: Key Theme – Revision and Exam Prep

	Intent (weekly outline)	Implementation (T and L Pedagogy/components used)	Impact	Powerful Knowledge (keywords and terminology)	Personal Development Links
Week 1	Paper 1 2024	Direct Instruction Interactive Learning Practical Activities Collaborative Learning Formative Assessment Flipped Classroom Key Terms and Definitions Diagrams and Visual Aids Simulations and Software Tools Hands-On Activities Assessment Tools	✓ General exam preparation		Improving focus and memory retention techniques. Learning time management and productivity techniques. Developing effective
Week 2	Paper 2 2024		✓ General exam preparation		
Week 3	Exam Prep Exam Questions		✓ General exam preparation		

GCSE – YEAR 11 – COMPUTER SCIENCE – CURRICULUM OVERVIEW

Week 3					communication skills. Applying the cycle of learning new skills, understanding them, and putting them into practice.
Week 3					