Curriculum Statement of Intent and Implementation:

"A new curriculum aimed at giving students at Lyng Hall School the opportunity to study a course in the Computing Sector both practical and theoretical with exposure and experience of up to date technology with a clear practical use" (J Insley 2018)

5-year Curriculum (Multi Pathways):

The Computer Science directorate are excited at the developing curriculum which will offer students two different pathways at GCSE level depending upon expertise and interest giving students the freedom to choose which Computing based path suits their own needs. A key stage 3 plan which now incorporates a flavour of all aspects of both pathways which students are able to opt for at GSCE Level. The new Key Stage 3 curriculum which secures the fundamentals of computer science in a logical manner to allow students to access a much higher level of subject knowledge towards the final stages of school. During the course, our students will focus on retaining the basic knowledge needed for either pathway..

Intertwined in the knowledge-focused lessons will be the development computing and media based skills, as well as exposure to practical learning to improve technical skills using computers and technology such as digital cameras and advanced audio recording equipment.

Effective Teaching for understanding and recall:

Staff at Lyng hall believes that teaching with the principles of Cognitive Computer Science, i.e. Cognitive load theory, will help support our students in gaining access to, storing and achieving fluency and mastery in gaining knowledge and understanding. Underpinning our curriculum is the concept of schema: building knowledge that is secure, deep, well organised, retrievable with some fluency and can be applied to new concepts.

The goal – when we are teaching new knowledge, we want all students to know it, all of it, 'Making it stick isn't something we hope for; it's something we plan for and drive through.' And to 'know' means – recall, use, apply, explain – also known as 'understand'.

Fundamental factors in teaching this curriculum well - if everyone is to know all the knowledge under consideration, then:

- The fundamental knowledge needs to be clear, i.e. powerful knowledge;
- Everyone in the class neds to be involved;
- Students need to be able to check their own understanding as much as the teacher does; Checking needs to come before practising;
- Finally, students need independent practice – 'doing it myself without help'.

The excitement and need for Computer Science:

"The most important aspect of computer science is problem solving, an essential skill for life. Students study the design, development and analysis of software and hardware used to solve problems in a variety of business, scientific and social contexts. Because computers solve problems to serve people, there is a significant human side to computer science as well." (Universities Guide 2018)

Beyond the Curriculum:

GCSE Computer Science opens the door to a huge range of qualifications, whether this be in the computing sector or to be used as part of a STEM career. A GCSE in computing allows students to apply for a huge range of degree and degree level qualifications including, CS, AI, Software engineering, Engineering, Game Design, Ethical Hacking.

Creative iMedia Cambridge Nationals are vocationally related qualifications that take an engaging, practical and inspiring approach to learning and assessment. They're industry relevant, geared to key sector requirements and very popular with schools and colleges because they suit such a broad range of learning styles and abilities.

See the Computer Science Department Action Plan for details of current and planned implementation to achieve these aspirations.

(See also Department Frog Files for more documents and information)

NEW Computer Science Curriculum 2018 Onwards

Years 7 and 8 will follow a two year course on Computer Science and Media fundamentals. Following option choices in Year 9 they will either then follow the OCR Creative iMedia course or OCR GCSE Computer Science

Key Stage 3

BIG IDEAS	Y7		Y8	
ALGORITHMS	Scratch Introduction	Advanced Scratch	*covered through other units*	
DATA	*Covered as part of other Units*		Binary, Bits and Bobs	
PROGRAMMING	MicroBit Madness		Introduction to Python	Game Maker
HARDWARE & PROCESSING	Sound and Light		Vex Robotics	
INFORMATION TECHNOLOGY	Game Design		My Digital World	
NETWORKS	Introduction to HTML		HTML & CSS	

GCSE (1-9) GCSE Computer Science https://www.ocr.org.uk/qualifications/gcse/computer-science-j276-from-2016/specification-at-a-glance/

BIG IDEAS	Y10			Y11		
ALGORITHMS	Covered as part of all units			2.1 – Algorithms and Pseudocode		
DATA	1.1 Systems Architecture (Part B)			2.6 – Data Representation		
PROGRAMMING	Programming Project (20 Hours programming tasks)			2.2 – Programming Techniques	2.3.1 – Producing Robust programs (part a)	2.5 - Translators
HARDWARE & PROCESSING	1.1 Systems Architecture (Part a)	1.2 Memory	1.3 Storage	2.4 – Computational Logic		
NETWORKS	1.5 Network Topologies	1.4 LAN vs WAN		2.3.2 – Producing Robust programs (part b)		
INFORMATION TECHNOLOGY	1.6 System Security	1.7 Systems Software	1.8 Legal and Ethical Considerations			

Cambridge Nationals Creative iMedia https://www.ocr.org.uk/qualifications/cambridge-nationals/creative-imedia-level-1-2-award-certificate-j807-j817/qualification-at-a-glance/

BIG IDEAS	Y10	Y11
Pre-Production	**Unit R081 – Pre-Production Skills (Examination)**	**Unit R081 – Pre-Production Skills (Examination)**
Digital Graphics	*Some elements covered in R085*	**Unit R082 – Creating digital graphics**
Website Development	**Unit R085 – Creating a multipage website**	
Video Creation	**Unit R089 – Creating a video sequence**	

KS3 Long-term Plan

Year 7	Week	Topic and Link to GCSE Computing
Term 1	1	Baseline Test
	2-7	**Scratch Introduction (5 Hours + 1 Assessment)**

	7-12	**Computer Hardware** **(5 Hours + 1 Assessment)**
Term 2	13- 18	**Introduction to HTML** **(5 hours +1 assessment)**
	19 - 26	**Scratch Game Maker** **(8 Hours)**
Term 3	27 -32	**Advanced Scratch** **(5 Hours + 1 Assessment)**
	33 -38	**MicroBit Madness** **(5 Hours + 1 Assessment)**

KS3 Long-term Plan

Year 8	Week	Topic and Link to GCSE Computing
	1	Baseline Test
Term 1	2-7	**My Digital World** **(5 Hours + 1 Assessment)**
	7-12	**Binary, Bits and Bobs** **(5 Hours + 1 Assessment)**
Term 2	13- 18	**Introduction to Python** **(5 hours +1 assessment)**
	19 - 26	**Vex Robotics** **(8 Hours)**
Term 3	27 -32	**HTML & CSS** **(5 Hours + 1 Assessment)**
	33 -38	**Game Maker** **(5 Hours + 1 Assessment)**

Year 10	Week	Paper 1
Term 1	1-2	Topic 1.1 Systems Architecture
	3-4	Topic 1.2 Memory
		Fortnightly tests to take place during this.
	Week	Paper 1
	5-7	Topic 1.3 Storage
	8-9	Topic 1.4 LAN vs WAN
	10-13	Topic 1.5 Network Topologies
Term 2	14-18	Programming Project
	19-21	
	22-25	
Term 3	26-30	Topic 1.6 Systems Security
	31-34	Topic 1.7 Systems Software
	35-37	Topic 1.8 Legal and Ethical Considerations

GCSE Computing (9-1)

Year 11	Week	Paper 2
Term 1	1-3	Topic 2.1 / 2.2 Algorithmic Thinking / Programming Techniques
	4-6	Topic 2.3 / 2.5 Producing Robust Programs / Translators
	7-9	Topic 2.4 /2.6 Computational Thinking / Data Representation
Term 2		Revision
		Revision
		Revision
		Revision
		Revision
		Revision
Term 3		Revision
		Revision
		Revision
		Revision
		Revision
		Revision

OCR Cambridge National – Creative iMedia

Year 10	Week	
Term 1	1-2	Unit R085 Creating a Multipage website (Project to be submitted for January Moderation)
	3-4	
	Week	
	5-7	
	8-9	
	10-13	
Term 2	14-18	Unit R089 Creating a Video Sequence (Project to be submitted for June Moderation)
	19-21	
	22-25	
Term 3	26-30	Unit R081 Pre-Production Skills (Part a) Mock Exam in July
	31-34	
	35-37	

Year 11	Week	
	1-2	
	3-4	Unit R081 Pre-Production Skills (Part a) First Exam entry sitting in January
Term 1	Week	
	5-7	
	8-9	Unit R081 Pre-Production Skills (Part b) First Exam entry sitting in January
	10-13	
	14-18	
Term 2	19-21	Unit R082 Producing Digital Graphics (Project to be submitted for April Moderation)
	22-25	
	26-30	
Term 3	31-34	Unit R081 Preparation for re-sit of examination to improve overall grade
	35-37	