Landau Learner Curriculum Overview

Subject: Computer Science

Director of Learning: IA Year: 12

Curriculum organisation						
Students are taught in mixed ability for the equivalent of six single lessons per fortnight. These sessions are split between 2 staff 3:2 split between SDC and IA						
What topics will students be studying this year? Includes links to National Curriculum, Curriculum Intent and Prior Related Learning*						
Term 1:	Term 2:	Term 3:	Term 4:	Term 5:		
Components of a computer	Software Development	Database Concepts	Internet Communications	Data Structures		
Computational Thinking	Problem Solving	 Algorithms, Searching and Sorting 	 Primitive Data Types, Binary and Hexadecimal 	Logic Gates		
 System Software Functions 	 Compression Encryption and Hashing 		 Object Oriented Programming 	 Karnaugh Maps 		
			Data Structures	 Ethical, Moral, Environmental and Legal 		
			 Programming – HTML, CSS & Javascript 	implications of computing		
				Python Project Programming		
Prior learning: Programming Y7 T1, T3, Y8 T1, Y9	Prior learning: Programming Y7 T1, T3, Y8 T1, Y9	Prior learning : Programming Y7 T1, T3, Y8 T1,	Prior learning: Programming Y7 T1, T3, Y8 T1,3,5, Y9 T1, 2,	Prior learning: Programming Y7 T1, T3, Y8 T1, Y9 T1, 2, 3,		
T1, 2, 3, 4 Y10 T1, Y11 T1,2,3,4,5. Computational	T1, 2, 3, 4 Y10 T1, Y11 T1,2,3,4,5. Computational	Y9 T1, 2, 3, 4 Y10 T1, Y11 T1,2,3,4,5.	3, 4 Y10 T1, Y11 T1,2,3,4,5. Computational thinking Y7 T5.	4 Y10 T1, Y11 T1,2,3,4,5. Computational thinking Y7 T5. Y9		
thinking Y7 T5. Y9 T1, 2,3,4,5 Y10 T1, 3, 4, 5 Y11	thinking Y7 T5. Y9 T1, 2,3,4,5 Y10 T1, 3, 4, 5 Y11	Computational thinking Y7 T5. Y9 T1, 2,3,4,5 Y10	Y9 T1, 2,3,4,5 Y10 T1, 3, 4, 5 Y11 T1, 2,3,4,5 Data types Y9	T1, 2,3,4,5 Y10 T1, 3, 4, 5 Y11 T1, 2,3,4,5 Logic Y9 T2, Y10		
T1, 2,3,4,5. Memory Y10 T3, 4 Y11 T1,2 Systems	T1, 2,3,4,5 Data representation Y9 T3, Y11 T4	T1, 3, 4, 5 Y11 T1, 2,3,4,5	T2 Y10 T3	Т3		
Architecture Y10 T3 Y11 T1	A Level Specification:	A Level Specification:	A Level Specification:	A Level Specification:		
A Level Specification:	Develop:	Develop:	Develop:	Develop:		
Develop:	 An understanding and ability to apply the 	 An understanding and ability to apply the 	 An understanding and ability to apply the fundamental 	 An understanding and ability to apply the fundamental 		
 An understanding and ability to apply the 	fundamental principles and concepts of computer	fundamental principles and concepts of	principles and concepts of computer science, including:	principles and concepts of computer science, including:		
fundamental principles and concepts of computer	science, including: abstraction, decomposition,	computer science, including: abstraction,	abstraction, decomposition, logic, algorithms and data	abstraction, decomposition, logic, algorithms and data		
science, including: abstraction, decomposition,	logic, algorithms and data representation	decomposition, logic, algorithms and data	representation	representation		
logic, algorithms and data representation	 The ability to analyse problems in 	representation	 The ability to analyse problems in computational terms 	 The ability to analyse problems in computational terms 		
 The ability to analyse problems in 	computational terms through practical experience	 The ability to analyse problems in 	through practical experience of solving such problems,	through practical experience of solving such problems,		
computational terms through practical experience	of solving such problems, including writing	computational terms through practical	including writing programs to do so	including writing programs to do so		
of solving such problems, including writing	programs to do so	experience of solving such problems, including	 The capacity to think creatively, innovatively, 	 The capacity to think creatively, innovatively, 		
programs to do so	 The capacity to think creatively, innovatively, 	writing programs to do so	analytically, logically and critically	analytically, logically and critically		
 The capacity to think creatively, innovatively, 	analytically, logically and critically	 The capacity to think creatively, innovatively, 	The capacity to see relationships between different	 The capacity to see relationships between different 		
analytically, logically and critically	 The capacity to see relationships between 	analytically, logically and critically	aspects of computer science	aspects of computer science		
 The capacity to see relationships between 	different aspects of computer science	 The capacity to see relationships between 	Mathematical skills.	Mathematical skills.		
different aspects of computer science	 Mathematical skills. 	different aspects of computer science	Curriculum Intent:	Curriculum Intent:		
Mathematical skills.	Curriculum Intent:	Mathematical skills.	This enables students develop their programming	This enables students develop their programming		
Curriculum Intent:	This enables students develop their programming	Curriculum Intent:	understanding and application to program that would be	understanding and application to program that would be		
This enables students develop their programming	understanding and application to program that	This enables students develop their	used in industry. This develops their digital literacy and	used in industry. This develops their digital literacy and		
understanding and application to program that	would be used in industry. This develops their	programming understanding and application to	develops the mind-set of a computer scientist.	develops the mind-set of a computer scientist.		
would be used in industry. This develops their	digital literacy and develops the mind-set of a	program that would be used in industry. This	Additionally, this allows them to understand at greater	Additionally, this allows them to understand at greater		
digital literacy and develops the mind-set of a	computer scientist. Additionally, this allows them	develops their digital literacy and develops the	depth how the computer works as a whole system.	depth how the computer works as a whole system.		
computer scientist. Additionally, this allows them	to understand at greater depth how the computer	mind-set of a computer scientist. Additionally,	Developing the knowledge of what happens when			
to understand at greater depth how the computer	works as a whole system.	this allows them to understand at greater depth	processing instructions.			
works as a whole system.		how the computer works as a whole system.				

Equipment needed for sessions:		What can you do to support your child?		
• • •	Cambridge Elevate Textbook (Provided by College) Computer Science Exercise book (IA/SDC) Computer and internet access (provided by College) Lesson resources (Digital and physical provided by the learning tutor)	 Encourage your student to engage with their homework and complete it on time and to a high standard, asking them to show you the finished work. Take an interest in what you child is learning and talk to them about Computing in the real world Encourage them to watch television shows, documentaries and films that include computer science and developing technology. 		
How will learning be assessed and progress measured?		Extension and enrichment activities:		
• • •	End of Topic assessment Marking of written and practical work is carried out on a regular basis in line with the College policy End of year summative assessment. Regular peer and self-marking.	 Robotics and Coding Club (Thursday with IA) The National Museum of Computing/Bletchley Park/ Manchester's Museum of Science & industry At-Bristol Science Centre / National Space Centre The Science Museum / National Media Museum/ Jodrell Bank 		
		Leicester Retro Computer Museum		