

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:
<ul style="list-style-type: none"> Components of a computer Computational Thinking System Software Functions 	<ul style="list-style-type: none"> Software Development Problem Solving Compression Encryption and Hashing 	<ul style="list-style-type: none"> Database Concepts Algorithms, Searching and Sorting 	<ul style="list-style-type: none"> Internet Communications Primitive Data Types, Binary and Hexadecimal Object Oriented Programming Data Structures Programming – HTML, CSS & Javascript 	<ul style="list-style-type: none"> Data Structures Logic Gates Karnaugh Maps Ethical, Moral, Environmental and Legal implications of computing Python Project Programming
<p>Prior learning: Programming Y7 T1, T3, Y8 T1, Y9 T1, 2, 3, 4 Y10 T1, Y11 T1,2,3,4,5. Computational thinking Y7 T5. Y9 T1, 2,3,4,5 Y10 T1, 3, 4, 5 Y11 T1, 2,3,4,5. Memory Y10 T3, 4 Y11 T1,2 Systems Architecture Y10 T3 Y11 T1</p> <p>A Level Specification: Develop: <ul style="list-style-type: none"> An understanding and ability to apply the fundamental principles and concepts of computer science, including: abstraction, decomposition, logic, algorithms and data representation The ability to analyse problems in computational terms through practical experience of solving such problems, including writing programs to do so The capacity to think creatively, innovatively, analytically, logically and critically The capacity to see relationships between different aspects of computer science Mathematical skills. Curriculum Intent: This enables students develop their programming understanding and application to program that would be used in industry. This develops their digital literacy and develops the mind-set of a computer scientist. Additionally, this allows them to understand at greater depth how the computer works as a whole system.</p>	<p>Prior learning: Programming Y7 T1, T3, Y8 T1, Y9 T1, 2, 3, 4 Y10 T1, Y11 T1,2,3,4,5. Computational thinking Y7 T5. Y9 T1, 2,3,4,5 Y10 T1, 3, 4, 5 Y11 T1, 2,3,4,5 Data representation Y9 T3, Y11 T4</p> <p>A Level Specification: Develop: <ul style="list-style-type: none"> An understanding and ability to apply the fundamental principles and concepts of computer science, including: abstraction, decomposition, logic, algorithms and data representation The ability to analyse problems in computational terms through practical experience of solving such problems, including writing programs to do so The capacity to think creatively, innovatively, analytically, logically and critically The capacity to see relationships between different aspects of computer science Mathematical skills. 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Y9 T1, 2,3,4,5 Y10 T1, 3, 4, 5 Y11 T1, 2,3,4,5</p> <p>A Level Specification: Develop: <ul style="list-style-type: none"> An understanding and ability to apply the fundamental principles and concepts of computer science, including: abstraction, decomposition, logic, algorithms and data representation The ability to analyse problems in computational terms through practical experience of solving such problems, including writing programs to do so The capacity to think creatively, innovatively, analytically, logically and critically The capacity to see relationships between different aspects of computer science Mathematical skills. Curriculum Intent: This enables students develop their programming understanding and application to program that would be used in industry. This develops their digital literacy and develops the mind-set of a computer scientist. Additionally, this allows them to understand at greater depth how the computer works as a whole system.</p>	<p>Prior learning: Programming Y7 T1, T3, Y8 T1,3,5, Y9 T1, 2, 3, 4 Y10 T1, Y11 T1,2,3,4,5. Computational thinking Y7 T5. Y9 T1, 2,3,4,5 Y10 T1, 3, 4, 5 Y11 T1, 2,3,4,5 Data types Y9 T2 Y10 T3</p> <p>A Level Specification: Develop: <ul style="list-style-type: none"> An understanding and ability to apply the fundamental principles and concepts of computer science, including: abstraction, decomposition, logic, algorithms and data representation The ability to analyse problems in computational terms through practical experience of solving such problems, including writing programs to do so The capacity to think creatively, innovatively, analytically, logically and critically The capacity to see relationships between different aspects of computer science Mathematical skills. Curriculum Intent: This enables students develop their programming understanding and application to program that would be used in industry. This develops their digital literacy and develops the mind-set of a computer scientist. Additionally, this allows them to understand at greater depth how the computer works as a whole system. Developing the knowledge of what happens when processing instructions.</p>	<p>Prior learning: Programming Y7 T1, T3, Y8 T1, Y9 T1, 2, 3, 4 Y10 T1, Y11 T1,2,3,4,5. Computational thinking Y7 T5. Y9 T1, 2,3,4,5 Y10 T1, 3, 4, 5 Y11 T1, 2,3,4,5 Logic Y9 T2, Y10 T3</p> <p>A Level Specification: Develop: <ul style="list-style-type: none"> An understanding and ability to apply the fundamental principles and concepts of computer science, including: abstraction, decomposition, logic, algorithms and data representation The ability to analyse problems in computational terms through practical experience of solving such problems, including writing programs to do so The capacity to think creatively, innovatively, analytically, logically and critically The capacity to see relationships between different aspects of computer science Mathematical skills. Curriculum Intent: This enables students develop their programming understanding and application to program that would be used in industry. This develops their digital literacy and develops the mind-set of a computer scientist. Additionally, this allows them to understand at greater depth how the computer works as a whole system.</p>

<p>Equipment needed for sessions:</p> <ul style="list-style-type: none"> 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) 	<p>What can you do to support your child?</p> <ul style="list-style-type: none"> 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 your 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.
<p>How will learning be assessed and progress measured?</p> <ul style="list-style-type: none"> 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. 	<p>Extension and enrichment activities:</p> <ul style="list-style-type: none"> 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