

Develop:
 Abstraction
 Computational Thinking
 Data structures
 Security and safety
 Independence

Sandbach School Computing

Year 12 Computer Science Curriculum Sequence

Intent: Studying A Level Computer Science is the top tier IT qualification at Level 3. Learners will gain a concrete understanding of a wide range of skills that are highly in demand and formulate the grounding for future thought and innovation in digital fields. Through careful study and the development of computational thinking, learners will aspire to fulfil the job roles of the next few decades.

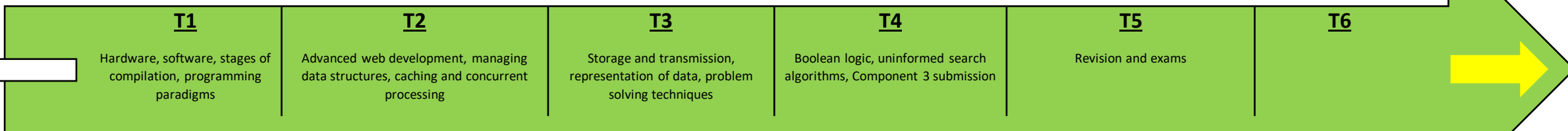
T1	T2	T3	T4	T5	T6
Hardware basics, system architecture Procedural programming 1, 2	Software basics, functions of the OS HTML/CSS/JavaScript, Assembly, Data Structures	Databases, networking basics, data transmission Computational thinking, programming structures	Representation of data, legal and ethical Methodologies and testing, algorithms	Component 3 NEA Server and client side processing	Component 3 NEA Object oriented techniques
Why these topics? Hardware units are completed with the "Basics" unit being a bridging unit to manage the increased difficulty from GCSE level. Learners begin a new language and the basics of procedural programming are recapped and applied to the new language.	Why This Topic? Continuing in specification order for the theoretical components of the course. Again, a basics unit introduces learners to the topic area, then learning is fully realised with the full A Level unit to follow. Learners increase their programming knowledge with data structures and are introduced to web development and assembly programming.	Why This Topic? The theory components continue in specification order. Networks basics bridges the gap between GCSE and A Level again. The programming sections move into Component 2	Why This Topic? The final theory units from the AS specification are completed. The Component 2 units from AS are also completed here.	Why This Topic? Learners embark on a significant software development project to provide evidence for the Component 3 NEA submission. Many students choose a dynamic website so the server and client side processing unit is taught here to support the project.	Why This Topic? The Component 3 project continues with the aim to complete the analysis and design sections. Many students choose game making so teaching object oriented techniques here support this and, of course, many other project choices.
Curriculum Links <ul style="list-style-type: none"> • Technical • Hardware • Career focussed 	Curriculum Links <ul style="list-style-type: none"> • Code • Abstraction • Computational thinking 	Curriculum Links <ul style="list-style-type: none"> • Code • Numbers • Computational thinking 	Curriculum Links <ul style="list-style-type: none"> • Technical • Hardware • Code • Numbers • Computational thinking 	Curriculum Links <ul style="list-style-type: none"> • Technical • Hardware • Career focussed 	Curriculum Links <ul style="list-style-type: none"> • Code • Abstraction • Career focussed • Computational thinking
Teaching these topics here supports: Grounding of the required hardware knowledge to access the remainder of the A Level course. Laying the foundations of programming in C#.	Teaching these topics here supports: Continued interleaving driving improvement in programming skills. New topics of web and assembly development.	Teaching these topics here supports: Further knowledge and skills for the exam. Computational thinking skills begin to build towards the NEA.	Teaching these topics here supports: Full content of AS Computer Science has been covered at this point.	Teaching these topics here supports: Client and server side processing supports the NEA project.	Teaching these topics here supports: Object oriented techniques supports the NEA project.
These topics feed from: Skills learned at GCSE are recapped and applied to a new language	These topics feed from Web development is taught at key stage 3, is recapped and advanced greatly here.	These topics feed from Computational thinking touched on at GCSE. Networking basics recapped from GCSE and advanced.	These topics feed from GCSE Computer Science	These topics feed from The theoretical learning so far in the course.	These topics feed from The theoretical learning so far in the course.



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Year 13 Computer Science Curriculum Sequence

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<p>Why these topics? The hardware and software learning at school is completed here. Programming paradigms is a subject literacy focussed unit where students learn to describe and explain a wide range of approaches to structuring programming code.</p>	<p>Why This Topic? The advanced web development unit looks at ranking algorithms and search engine optimisation. The final sections of the databases unit.</p>	<p>Why This Topic? The high end networking unit completes this study at school. The problem solving techniques are introduced and practiced ready for the Component 2 exam.</p>	<p>Why This Topic? The final algorithms are a fundamental part of both exams and so it is helpful to learn them just prior to these being taken. The final NEA is submitted and remaining theory completed.</p>	<p>Why This Topic? Teachers can identify gaps in students knowledge and tailor learning to their needs to best support them in the upcoming exams.</p>	
<p>Curriculum Links</p> <ul style="list-style-type: none"> • Technical • Code • Algorithms • Abstraction 	<p>Curriculum Links</p> <ul style="list-style-type: none"> • Code • Logic • Responsibility 	<p>Curriculum Links</p> <ul style="list-style-type: none"> • Technical • Computational thinking • Code 	<p>Curriculum Links</p> <ul style="list-style-type: none"> • Code • Computational thinking • Abstraction • Logic 		
<p>Teaching these topics here supports: The final hardware and software units necessary for the exams. Learners need to understand how to describe a range of programming paradigms to become expert computer scientists.</p>	<p>Teaching these topics here supports: The data structures units are fundamental to both Component 1 and Component 2. Final parts of computational thinking and databases.</p>	<p>Teaching these topics here supports: The remaining problems solving techniques formulate the basis for completing the Component 2 exam.</p>	<p>Teaching these topics here supports: The final theoretical unit ready for the summer exams. The NEA is submitted.</p>	<p>Teaching these topics here supports: Direct support for the exams.</p>	
<p>These topics feed from: Prior hardware, software and programming units</p>	<p>These topics feed from Previous data structures, databases and computational thinking units</p>	<p>These topics feed from Previous networking, binary and problem solving units</p>	<p>These topics feed from Previous algorithms and logic units</p>	<p>These topics feed from All prior learning culminates here.</p>	

