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, Little Man Computer, 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 • **Technical** • **Hardware** • **Career focussed**	**Curriculum Links** • **Code** • **Abstraction** • **Computational thinking**	**Curriculum Links** • **Code** • **Numbers** • **Computational thinking**	**Curriculum Links** • **Technical** • **Hardware** • **Code** • **Numbers** • **Computational thinking**	**Curriculum Links** • **Technical** • **Hardware** • **Career focussed**	**Curriculum Links** • **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.