



Year 11 Design and Technology



What have students at St. Crispin's been taught to understand and be able to do?

Core Knowledge

'Core' knowledge of Design and Technology principles demonstrates learners' broad understanding of principles that all learners should have across the subject.

Learning about Design and Technology will encourage learners to develop design and thinking skills that open up a world of possibility, giving them the tools to create the future. This specification will excite and engage learners with contemporary topics covering the breadth of this dynamic and evolving subject. It will generate empathetic learners who have the ability to confidently critique products, situations and society in every walk of their lives now and in the future.

Design and Technology is a subject that brings learning to life, requiring learners to apply their learning to real-life situations. This qualification aims to relate authentic real-world awareness of iterative design practices and strategies used by the creative, engineering and manufacturing industries. Learners will be required to use critical thinking, leading towards invention and design innovation, to design and make prototypes that solve real and relevant problems, considering their own and others' needs, wants and values.

Design and Technology enables learners to progress from their learning in Key Stage 3, developing critical thinking and practical skills that will serve them well in their future. Learners will build and develop their broad knowledge and understanding from Key Stage 3, whilst also having the freedom to focus in more depth on areas of Design and Technology that most interest them.

Core Skills

Experiencing learning through practical activity (both designing and technical principles) is fundamental to the delivery of this specification, as is the importance of the contextual relevance of design and technology practice. To prepare learners to successfully complete the 'Iterative Design Challenge', they are increasingly be given autonomy to make decisions in order to justify their reasoning when solving problems in their own way.

Design and Technology also requires learners to apply mathematical skills and understand related science. This reflects the importance of Design and Technology as a pivotal STEM subject. This specification requires learners to transfer skills from maths and science to develop solutions to design challenges.

From a practical point of view students will be taught how sensors and control devices respond to a variety of inputs: sensors including light dependent resistors (LDR), infra-red sensors switches including tilt switches, push-to-make switches and time-delay switches. How devices are used to produce a range of outputs, including: light-emitting diodes (LED) to produce light speakers and buzzers to produce sound motors to produce motion.

The use of programmable components such as microcontrollers, to embed functionality. Students will also be taught the use of specialist techniques linked to systems, in particular soldering equipment, including soldering irons and equipment needed to produce printed circuit boards. Students will also use hand tools and equipment used to shape, fabricate, construct and assemble high quality prototypes.



Year 11 Design and Technology continued



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Core Knowledge

This qualification will give learners an opportunity to engage with creativity and innovation and understand how they can be enhanced by the application of knowledge from other disciplines across the curriculum such as mathematics, science, art and design, computing and humanities, as well as the practical and technical knowledge and understanding they will learn from Design and Technology.

How has learning been assessed?

Written examination: 1 hour and 45 minutes 50% of the qualification 100 marks.

Content overview

Section A: Core This section is 40 marks and contains a mixture of different question styles, including open-response, graphical, calculation and extended-open-response questions. There will be 10 marks of calculation questions in Section A.

Section B: Systems. This section is 60 marks and contains a mixture of different question styles, including open-response, graphical, calculation and extended-open-response questions. There will be 5 marks of calculation questions in Section B.

Non-examined assessment 50% of the qualification 100 marks

Assessment overview

- Students will undertake a project based on a contextual challenge released by us a year before certification
 - This will be released on 1st June and will be available on our website
 - The project will test students' skills in investigating, designing, making and evaluating a prototype of a product
 - Task will be internally assessed and externally moderated
 - The marks are awarded for each part as follows.
- 1 - Investigate (16 marks)
 - 2 - Design (42 marks)
 - 3 - Make (36 marks)
 - 4 - Evaluate (6 marks).